AN APPROACH TO HUMAN DEVELOPMENT IN RURAL WESTERN CAPE WITH SPECIFIC REFERENCE TO FARM WORKERS

BY
NORMA TREGURTHA

A thesis submitted in fulfilment of the requirements for the degree of Master of Commerce (Economics) at the University of Stellenbosch

December 2005

Declaration

I, the undersigned, hereby declare that the work contained in this thesis is my own original work and that I have not previously in its entirety or in part submitted it at any university for a degree.

ABSTRACT

Using the conceptual framework of the human development approach as proposed by Amartya Sen, this dissertation attempts to measure the absolute and relative development status of Western Cape farm workers for 1996 and 2001. The dissertation begins by presenting a critical analysis of the traditional neo-classical model of development, and goes further to demonstrate how, from the early 1970s, the validity of this model was increasingly questioned by the broader development fraternity and eventually supplanted by the human development approach in the 1990s.

The human development approach is based on two conceptual roots namely; social exclusion theory and the capability model of Amartya Sen. Social exclusion theory identifies important themes such as gender and culture which the neo-classical development approach failed to reflect in its theoretical and methodological structures while the capability model establishes the philosophical and theoretical foundations of human development. More specifically it clarifies the question: 'what is wellbeing, how do we measure it and how is it linked to development and poverty?

From the perspective of the human development approach, wellbeing is about being able to exercise economic, social and political choice or freedom. These freedoms are labelled capabilities and are they are derived from functioning choices. A functioning represents different aspects of the state of a person, and can either be an activity such as working or a state of existence such as being educated. A functioning is an achievement whereas a capability is the possible options or choices open to a person. It is on the basis of a person's capability set that an evaluation of their level of wellbeing is possible. The human development approach therefore measures development in terms of capabilities

The key methodological challenges related to measuring development in terms of human capabilities are numerous. The theory of human development does not specify which capabilities to include when measuring poverty or wellbeing, in addition it provides no method to rank capabilities. Capabilities can simultaneously expand in some areas while contract in others. Because there is no method of ranking capabilities it is impossible to conclude whether on balance, development has taken place. Finally on a practical level the data requirements to measure wellbeing in a multivariate way are significant and are more often than not based on detailed household socio-economic surveys that are not easily replicated over time. For these reasons, while development economists endorse the theory of human development on an ideological and strategic level, methodologically there is still a tendency to measure it in terms of income levels.

Despite these challenges a number of empirical applications of the human development approach have emerged in recent years and a cross-section of these studies is described as part of this dissertation. The main methodological issues that have to be confronted when operationalising the human development approach are also documented while the appropriateness of using the theory of fuzzy sets to measure vague concepts such as poverty and wellbeing, is emphasized.

Drawing on data from the 1996 and 2001 Population Census this dissertation confronts these measurement challenges and by limiting the analysis to 6 functionings namely; housing, housing services, education, health, social relations, employment and economic achievements, attempts to measure the overall development status of Western Cape farm workers. By comparing this result with the achievement of other labour groups such as the unemployed and workers employed elsewhere in the economy it is also possible to conclude on their relative development status.

With respect to functioning achievement (measured as fuzzy scores), in 2001 farm workers scored the lowest of all the labour groups in terms of housing services, social relations and education achievement. In terms of their access to economic resources, while farm workers individual and household monthly income levels exceeded that of the unemployed - their fuzzy score was roughly half of that achieved by workers in other sectors. These various functionings were weighted and aggregated to arrive at an overall wellbeing indicator, and almost no difference could be detected in the score achieved by farm workers and the unemployed. This result was found to be relatively insensitive to the weight assigned to a particular functioning. While there is almost no difference in the overall level of human development "enjoyed" by farm workers and the unemployed, a large difference was found between farm workers and other workers in the economy. It can be argued that this discrepancy is indicative of the high concentration of unskilled workers found in the agricultural sector. However when occupation was brought into consideration, a relatively large discrepancy in development levels between farm workers and employed unskilled workers, could still be detected.

In terms of gender, overall women farm workers scored slightly higher than men, however in terms of personal income they scored considerably lower than men. This difference could not be attributed to differences in the number of hours worked per week and confirms the findings of other studies that showed that women farm workers do not receive equal wages for equal work effort.

In terms of development status, the results generated by the 1996 population census, were consistent with 2001 however, here farm workers scored poorly in terms of the housing, housing services, education and social relations functioning. It was only with respect to the employment and economic resources functionings that farm workers ranked above the unemployed. By applying the frequency-based membership functions generated for 1996 to the 2001 data set, it was possible to detect absolute changes in development status that took place between 1996 and 2001. Relative to the other labour groups, farm workers consistently exhibited the highest rate of progress. Education, social relations and housing services functionings scores in 2001, were 20% higher than 1996 levels.

Key Words: Poverty, development, wellbeing, human development approach, capabilities, functionings, fuzzy sets, Western Cape, Western Cape agriculture, farm workers

SAMEVATTING

Die konseptuele raamwerk van die menslike ontwikkelings benadering, soos uiteengesit deur Amartya Sen, dien as vertrekpunt vir hierdie navorsing. Die navorsing poog om die absoluute and relatiewe ontwikkelingsvlak van Wes Kaapse plaaswerkers vir 1996 en 2001, te meet. 'n Kritiese ontleding van die neoklassieke model van ontwikkeling word geskets, en daarna gaan die analise verder om te bewys hoe die ontwikkelingsdenkskool as geheel, vanaf die laat 1970s, die geldigheid van hierdie model bevraagteken het. Hierdie model was uiteindelik in die vroeë 1990s vervang deur die menslike ontwikkelingsbenadering.

Die menslike ontwikkelingsbenadering is gebaseer op twee konseptuele wortels naamlik; sosiale uitsluitingsteorie en die vermoënsmodel van Amartya Sen. Die sosiale uitsluitingsteorie identifiseer belangrike temas soos geslag en kultuur wat die neoklassieke model nagelaat het om te inkorporeer in sy teoretiese en metodologiese struktuur, terwyl die vermoënsmodel, die filosofiese and teoretiese fondasie van die menslike ontwikkelingsbenadering vasstel. Meer spesifiek dit verhelder die vraag "wat is welvaart, hoe meet ons dit en wat is die verband tussen ontwikkeling en armoede".

Van uit die perspektief van die menslike ontwikkelingsbenadering, gaan welvaart oor die uitoefening van ekonomiese, sosiale en politiese keuses of vryhede. Hierdie vryhede is genoem vermoëns en is afgelei vanaf verrigtingskeuses. 'n Verrigting reflekteer verskillende aspekte van 'n person en kan 'n aktiwitiet wees soos werk of 'n stand van bestaan soos geletteredheid. 'n Verrigting is 'n prestasie terwyl 'n vermoë is die reeks moontlike opsies of keuses is wat 'n persoon teëkom. Dit is op die basis van 'n persoon se vermoëns stel, dat 'n evaluasie van sy vlak van welvaart moontlik is. Dus meet die menslike ontwikkelingsbenadering ontwikkeling in terme van vermoëns.

Daar is baie metodologiese struikelblokke wat oorkom moet word voordat ontwikkeling in terme van menslike vermoëns gemeet kan word. Die teorie van menslike onwikkeling spesifiseer nie watter vermoëns ingesluit moet wees by die meting van armoede of welvaart nie. Verder is daar geen metode om vermoëns te rangskik nie. Vermoëns kan gelyktydig groei in een area en krimp in 'n ander. Omdat geen metode bestaan om vermoëns te rangskik nie, is dit onmoontlik om vas te stel of ontwikkeling wel plaas gevind het. Op 'n praktiese vlak, die data of inligtingsbehoefte om welvaart op 'n veelsydige manier te meet, is groot. Dit is normal weg gebaser op gedetailleerde huishoudelike sosio-ekonomies vraelyste wat nie maklik herhaalbaar is oor tyd nie. Vir hierdie redes, terwyl ontwikkelingsekonoome die teorie van menslike ontwikkeling op beide ideologiese en strategiese vlak aanvaar, bestaan daar nog altyd die geneigdheid om dit te meet in terme van inkomste.

Ongeag hierdie uitdagings, het 'n hoeveelheid empiriese toepassings van die menslike ontwikkelingsbenadering wel na vore gekom en 'n deursnee hiervan is beskryf as deel van hierdie navorsing. Die hoof metodologiese vraagstukke wat uitgestryk moet word voordat die menslike ontwikkelingsbenadering prakties toegepas kan word, is uiteengesit.

Die toepaslikheid van die teorie van "fuzzy sets", om vae konsepte soos armoed en welvaart te meet, is ook beklemtoon.

Die resultate van die 1996 en 2001 bevolkingssensus word hier gebruik om hierdie meetingsuitdaging te konfronter. Die analise word beperk tot net ses verrigtinge naamelik; behuising, behuisingsdienste, opvoeding, gesondheid, sosiale verhoudings, indiensneming en ekonomiese prestasie. Hiermee probeer die narvorsing die algehele ontwikkelingsstatus van die Wes Kaapse plaaswerkers meet. Hierdie resultate word direk vergelyk met die resultate van ander werkersgroepe soos die werkloses en werkers in ander sektore van die ekonomie, om die relatiewe ontwikkelingsstatus van plaaswerkers vas te stel.

In terme van hulle verrigtingsprestasie (gemeet in terme van "fuzzy scores") in 2001 het plaaswerkers die laagste van al die werkersgroepe gevaar wat betref behuising, sosiale verhoudings en opvoedingsvlakke. In terme van toegang tot ekonomiese goedere, terwyl plaaswekers se individuele en huishoudelike maandelikse inkomste vlakke die van die werkloses veebygesteek het, was hulle telling die helfte van dit wat werkers in andere sektore behaal het. Hierdieverrigtings prestasies was geweeg en bymekaar getel om n algehele welvaartsindeks te bereken. Dit was bevind dat hierdie resultaat relatief ongevoelig was tot gewigsmetodologie. Terwyl daar amper geen verskil was tussen die vlak van ontwikkeling van plaaswerkers en die van werkloses nie, is 'n goot verskil tussen plaaswerkers en ander werkers in die ekonomie gevind Hierdie verskil kon nie toegekryf word aan die groot konsentrasies van onopgeleide werkers werksaam in die landbou sektor nie. As beroep in ag geneem word, bly daar nog altyd 'n verskil tussen plaaswerkers en ander onopgeleide werkers.

In terme van geslag, het vroulike plaaswerkers, oor die algemeen beter gevaar as manlike werkers, alhoewel hulle in terme van persoonlike inkomste agter gebly het. Hierdie verskil kon nie toegeskryf wees aan die hoeveelheid ure gewerk per week nie en bevestig die bevindinge van ander navorsingsresultate wat gewys het dat vroulike plaaswerkes nie gelyke lone verdien vir dieselfde werk nie.

In terme van ontwikkelingsvlakke, stem die 1996 resultate met die van 2001 ooreen. In 1996 het plaaswerker slegter gevaar in behuising, behuisingsdienste, opvoeding en sosisale verhoudings verrigtinge. Die was alleenlik in terme van indiensneming en ekonomiese verrigtinge dat plaaswerkes bo die werkloses gerang het. Deur middel van die toepassing van die 1996 lidmaatskapsvergelyking op die 2001 datastel, was dit moontlik om die absolute verandering in ontwikkelingsstatus van Wes Kaapse plaaswerkers te meet. Relatief tot die ander werkersgroepe, het plaaswerkers die vinnigste voorsprong gemaak. In 2001 was opvoeding, sosiale verhoudinge en die behuisings verrigting, 20% hoër as die van 1996.

Sleutelterme: armoede, ontwikkeling, welvaart, menslike ontwikkelings benaadering, vermoëns, verrigtinge, "functionings", "fuzzy sets", Wes-Kaap, Wes-Kaapse landbou, plaaswerkers

The financial assistance of the Centre for Science Development is gratefully acknowledged

CONTENTS

CHAPTER ONE

INTRODUCTION

1.1 INTRODUCTION[1]

In 1998, Indian born economist Amartya Sen was awarded the Noble prize in Economics for his contribution to the field of welfare economics. More specifically, the Royal Swedish Academy of Sciences acknowledged Sen's unique contribution to our understanding of the nature, causes and consequences of poverty. In Sen's view, poverty is not simply a question of having too little money, it is about living a life devoid of economic, social and political choice or freedom. These choices or freedoms Sen (1987) refers to as human capabilities, and he goes further to suggest that they can be employed to assess a person or society's level of wellbeing. He convincingly argues that poverty, and its corollary, development, are multivariate concepts related to the "beings and doings" (functionings) that constitute daily life, and must be measured as such (Sen, 1987). These "beings and doings" can take the form of more rudimentary achievements such as being well nourished and literate, to more complex functionings such as being able to command self-respect. By giving poverty a human face, Sen injected ethics back into the "dismal science" of economics. The theory and practice of development economics in particular benefited from this insight as it led to the re-conceptualisation of poverty in terms of human development.

Multilateral development agencies, donors and national governments have universally embraced[2] this view of human development. Their acceptance has, however, been confined to an ideological and strategic level. That is, they accept that development is multidimensional (related amongst others to being literate, leading a long and healthy life) and the policies they

---

[1] Throughout this dissertation the terms "well-being" and "development" will be used interchangeably given that the objective of development is the promotion of societal and individual wellbeing. Furthermore, the terms "poverty" and "deprivation" will be considered special cases of the measurement of well being (development) (Boltvinik,1999).

[2] See for example the 1995 Copenhagen Declaration. The World Summit for Social Development, held in Denmark in 1995 was, at that stage, the largest single gathering of world leaders and heads of State and Government. At the conclusion of this Summit all participants adopted a Declaration (known as the Copenhagen Declaration) whereby they formally recognized the need to put people at the center of development and committed themselves to a Plan of Action to realize this objective (United Nations, 1995).

support include investing in education, nutrition and health. At the methodological level, however, there is still a tendency to measure development and poverty in terms of private incomes. The ready availability of income data and of statistical techniques to calculate poverty lines, minimum living levels and poverty head count ratios has encouraged the institutional acceptance of this ideological-methodological incongruence (Boltvinik, 1999).

Boltvinik (1999:5) refers to this incongruence as "generalised social schizophrenia" and goes on to state that it is "an expression of the disassociation of the economic and social realms, of production and consumption ... of what is measured by money and what is not." Laderchi (1999) explains how this "schizophrenia" developed out of convenience in that it implicitly assumes that the instrumental role money plays in generating some of the more important capabilities is so fundamental, that it can be used as a proxy. Moreover while monetary measures of poverty and development are imperfect, they have the advantage in that they are "practicable and easily replicated over time" (May *et al.,* 1998:6).

Sen's concept of human development, in contrast, presents something of a measurement challenge. So much so, that a number of scholars have questioned whether it is empirically possible to measure wellbeing in terms of capabilities, given that yardsticks to measure them do not readily exist (Robeyns, 2000). Furthermore, there is no real consensus around which "beings and doings" to include when assessing development. The high information requirement to produce such indicators is also viewed as problematic, especially in the case of developing countries where socio-economic data is generally limited (Robeyns, 2000; Chiappero Martinetti, 2000). Sen openly admits to these measurement difficulties. However, he rejects the notion that an indirect metric such as money or income can be used as a proxy for the measurement of capabilities and functionings. Interpersonal and inter-societal variability acts as an irregular wedge between commodities (income) and their ability to generate wellbeing outcomes (development). Sen concludes (1989:45): "In social investigation and measurement, it is undoubtedly more important to be vaguely right than to be precisely wrong."

The work of Amartya Sen is particularly relevant to the post-apartheid South Africa, given the broad and complex range of development issues the country continues to grapple with. While political freedom has been extended to all South Africans, economic and social freedom remains illusive. Since the 1980s structural inequalities, lack-lustre economic growth, unemployment, illiteracy and the limited availability of social services have become entrenched features of the economy and have contributed to the country's high poverty incidence. This poverty is not evenly distributed across the society, but keenly follows existing racial, gender and spatial cleavages (Vink and Tregurtha, 1999).

The Western Cape is generally considered the most developed of South Africa's nine provinces, yet addressing poverty remains a formidable policy challenge specifically in the non-metropolitan areas of the province. Numerous studies (e.g Sunde and Kleinbooi, 1999; Ewert *et a*l., 1999; Vink *et a.,l* 2001; Du Toit and Ally, 2002; London, 2003) have identified farm workers as a particularly vulnerable group. Thus, despite a strong attachment to the labour market and thereby access to a low but regular income stream, the majority of farm workers living and working in the Western Cape are thought to be poor. As will be shown, evaluating their development status only in terms of economic resources (income) would automatically make them more "developed" than the province's unemployed residents. However, when measuring their overall capability set, their "beings and doings", no such conclusion can necessarily be inferred. With respect to policy intervention this distinction is critical. In the first case, the most appropriate policy response would be the stimulation of employment opportunities for the unemployed. Farm workers would only indirectly benefit from this through an increased demand for labour leading to an increase in real wage rates. In the second instance, the focus would be on developing a range of policy interventions that directly target, amongst others, the working poor. The increased provision of publicly supplied goods and services such as health, education and housing would form part of such a strategy.

1.2 RESEARCH QUESTION AND RATIONALE

The objective of this dissertation is to provide a bridge between the theoretical construct of human development, and the practical operationalization of this concept so as to accurately

measure the absolute and relative development status of Western Cape farm workers. More simply, this dissertation seeks to research the question: Are Western Cape farm workers poor? The importance of knowing the answer to the research question posed, serves as the rationale for the study. If the development status of farm workers is shown to be low, policy makers are obligated to intervene on the basis of equity and efficiency considerations. These will be explained below.

1.2.1 Social justice: A South African Perspective

The Constitution of the Republic of South Africa, formally adopted in 1996, fleshed out the country's notion of social justice and its commitment to the values of reconciliation and reconstruction. In the preamble this is illustrated by the statement that the objective of the Constitution is to "[h]eal the divisions of the past and establish a society based on democratic values, social justice and fundamental human rights " (RSA, 1996:3). The legally enforceable Bill of Rights establishes the minimum standards necessary for the creation and preservation of a democratic South Africa.

The first right to be guaranteed by the Constitution is the right to equality. Equality, as an ethical value, is grounded on the belief that all people are equal. More formally put, "equality presupposes that all persons are equal bearers of rights within a just social order" (Albertyn and Kentridge, 1994:152). The equality clause implies that all South Africans, irrespective of race, gender or social status, have equal title to political rights and access to social services and other public goods.

Such a formal interpretation of equality, however, ignores the entrenched structural inequalities that exist in the economy as a result of apartheid. Political equality therefore needs to be extended to encompass economic equality in order for the right to equality to be interpreted in a substantive way. Furthermore several socio-economic rights are explicitly included in the Bill of Rights. Examples of these include the right to education, health and housing. The inclusion of these second-generation rights is contentious. Arguments that support

their inclusion note that socio-economic rights are indispensable for real civil or political rights. In other words " a vote without food is no vote at all" (Haysom, 1992:452).

> "For the constitution to have a meaningful place in the hearts and minds of the citizenry, it must address the most pressing needs of ordinary people. It cannot be seen to guarantee only political and civil rights and ignore the real needs of the people - it must promise both bread and [political] freedom. (Haysom, 1992)

The commitment of the Constitution to the position taken by Haysom (1992) is unreserved - in a post-apartheid South Africa bread and freedom are equally important. Ensuring "freedom" places an onus on the State not to infringe on the liberty of the individual, while the provision of "bread" requires the State to take positive action. The failure to address the absolute and relative poverty of any one group can therefore be considered unconstitutional.

1.2.2 The Competitiveness of Western Cape Agriculture

The development status of farm workers is also of concern because it impacts on the overall competitiveness of the province's agricultural sector. Agriculture is an important component of the Western Cape economy. Although the province contributes some 14% to South Africa's Gross Domestic Product, it generates about 23% of the total value added of the agricultural sector in South Africa, which was R25bn in 2001. Agriculture accounted for 5.2% of the Western Cape's Gross Regional Product in 2001 and provided 13% of all formal sector job opportunities (Vink and Tregurtha, 2003).

The Western Cape agriculture sector has been described as "unique" within the South African context. This uniqueness pertains to climate, commodity mix and profitability. In the 1980s and 1990s when the rest of the South African economy, and specifically the national agricultural sector was floundering, Western Cape agriculture continued to perform well. This good performance can partly be attributed to the province's relatively consistent winter rainfall pattern, which has allowed for production stability, and the expansion of the high-value, labour intensive fruit and wine sub-sectors. Moreover the inroads these specific sub-sectors have made in international commodity markets helped boost profits and output growth over that period (Vink and Tregurtha, 2003).

From the mid-1990s, the broader economic and institutional environment within which the Western Cape agriculture sector operated changed dramatically, impacting on the sector's short-run competitive dynamics. These factors included the deregulation of the marketing of agricultural products, agricultural trade liberalisation, land and labour reforms and public sector restructuring (Tregurtha and Vink, 2002). Preliminary evidence suggests that the Western Cape's agricultural sector survived these changes relatively unscathed, however in the past number of years the sector's terms of trade turned against it[3], flagging competitiveness as an issue.

According to Porter (1991) the global competitiveness of an industry depends on i) factor conditions, such as the availability of skilled labour and infrastructure, ii) demand conditions iii) the presence or absence of related and supporting industries and iv) firm strategy, structure and rivalry. Clearly the development status of farm workers, affects the factor conditions (endowments) of the agriculture-based industries and it is progressively impacting on demand conditions as well. Approximately 80% of all South African deciduous and citrus export fruit is sold to the European Union, primarily the United Kingdom (Tregurtha and Vink, 2002). In this market, large supermarket chains (known as multiples) are responsible for the retail of 70% of all fruit and vegetables sales (Barrientos *et al.,* 1999). Increasingly these companies are requiring assurances that good labour practices and environmental standards are being upheld in the exporting countries.

> "Whereas relations between supermarkets were once characterised by a policy of "don't ask, don't tell" regarding, say, pesticide uses and labour conditions, now supermarkets do ask, and suppliers must tell all about the production process: what chemicals are used, how the labour is clothed, housed and kept well; how the environment is protected (Freidburg, 2003:4)

For South African agricultural producers, access to lucrative international supply chains is now being determined by their ability to demonstrate that the development needs of farm workers are being addressed.

---

[3] For the 1995-2001 period, the output price index of agricultural commodities increased by 41.2% while input cost prices increased by 79,9%.

1.3 RESEARCH METHODOLOGY AND CHAPTER SEQUENCE

The theory of human development can best be understood if it is contrasted with the neo-classical model of development. Thus **Chapter Two,** by providing a critical analysis of the traditional neo-classical model of development, formulates a point of departure for this study. This chapter begins by presenting the neoclassical model, together with its various refinements, and goes further to demonstrate how, from the early 1970s, the validity of this model was increasingly questioned by the broader development fraternity.

Chapter Three introduces the theory of human development and shows how this concept is based on two separate but related strands of development thought. The first of these originates from an eclectic body of development research loosely termed social exclusion theory. This identifies important themes that the neo-classical development approach failed to reflect in its theoretical and methodological structure, and is primarily a response to the inherent limitations of the neo-classical model in identifying who or what the process of development marginalizes. The second strand of the human development approach explored in Chapter Three is the capability model formulated and refined by Sen. This model establishes the philosophical and theoretical foundations of human development. More specifically it clarifies the question: 'what is wellbeing, how do we measure it and how is it linked to development and poverty?

The analysis presented in these first two chapters is primarily aimed at clarifying the conceptual nature of human development, **Chapter Four** in contrast examines the extent to which this theoretical framework can be practically operationalized. It begins by delineating the main methodological issues that have to be dealt with when applying the human development approach to wellbeing measurement. This is followed by a short review of how existing empirical studies have addressed these issues. Chapter Four is concluded with a detailed description of the theory of fuzzy sets, as this methodology will be applied to the empirical data on Western Cape farm workers in Chapter Six.

Chapter Five introduces the reader to the Western Cape agricultural economy and explores the structural changes that have affected the demand and supply of farm labour in recent years. This analysis will show how over the past decade the agricultural labour sector has

become increasingly regulated in an attempt to address poor working conditions in the industry. This chapter is intended to serve as the background to the empirical results presented in Chapter Six.

Using data from the 1996 and 2001 Population Census**, Chapter Six** employs the theoretical and methodological tools presented in earlier chapters to empirically gauge the absolute and relative development status of Western Cape farm workers for the 1996-2001 period. This Chapter aims to comprehensively answer the research question posed: Are Western Cape farm workers poor?

considered the acknowledgement to have signalled the end of one interpretation of development.

Amartya Sen (1986:39), in responding to calls that development be abandoned, raised the following point:

> "I believe that this diagnosis has much truth in it but I also believe that contemptuous and simplistic though development might have been in this respect, the main themes which were associated with development economics, and have given it its distinctive character, are not rejectable for that reason".

Sen (1986) further suggested that the themes that launched development economics (growth, industrialisation and employment) remain relevant. Their relevance, however, lay in that they are the means of development and not its overall objective. The orthodox development paradigm failed to make this distinction. Sen (1986) therefore concluded that the only way in which the development discourse could proceed was if the ends of development became its focus: people and the lives they live.

2.2 AN HISTORICAL OVERVIEW OF DEVELOPMENT THEORY

2.2.1 Background

The term "economic development" came into use only after the Second World War. Previously, the economies of developing countries had been studied under the broad heading of Colonial Economics. However, economic and political events of the 1930s and early 1940s drew attention to these underdeveloped economies, prioritising their development status (Hettne, 1995).

In the wake of the Great Depression, the overall economic health of developing countries declined. The Depression affected commodity prices relatively more than the price of manufactured goods. Consequently, the economies of developing countries that were dependent on commodities were worse hit than their more developed counterparts. Declining terms of trade resulted in a loss of faith in the market mechanism and the distributional implication of free trade policies. Simultaneously the rise of Keynesian economics paved the

way for a more interventionist economic policy. The planning and management of the economies of less developed countries (LDCs) were seen as both necessary and justified (Pomfret, 1992).

On a political level the disintegration of the pre-war colonial power structure changed global politics. This change fed into the dynamics of the Cold War, with both sides scrambling for support. This created an opportunity for developing countries to assert their development needs internationally and to align themselves opportunistically. In the process, the future of underdeveloped countries became a foreign policy concern (Arndt, 1987; Hettne, 1995).

These events helped prioritise the 'development' of developing countries and established a separate sub-discipline: development economics. At the time developing countries looked to the West for a theoretical and practical development 'recipe', which they based on the West's experience of progress (Hettne, 1995; Todoro, 1989; Sutton, 1992).

2.2.2 Development as Growth (1945-1965)

The aftermath of World War II found Europe devastated and in need of reconstruction. This reconstruction was facilitated by a large injection of aid from the United States (USA) in the form of the Marshall Plan. The triumph of this initiative suggested that its successes could be replicated elsewhere, specifically in less developed countries (Hettne 1995, Todoro 1989).

In these early years, development theorists had in mind "improving the lot" of those who lived in the developing countries (Arndt 1987:50). This meant that they wanted to increase the general wellbeing of the poor. The economics profession soon appropriated the development concept, suggesting that planned economic growth was the principal way of achieving this end. The economic aspects of "wellbeing" enjoyed priority for the following three reasons:

- the difference between a developed and underdeveloped country was seen to be the "size and rate of growth" of their respective economies;
- economic change was assumed to usher in other changes; and

- growth was seen to be essential to generate the economic base necessary to finance social expenditure (Conyers and Hills 1994).

The development strategy advocated by growthmanship was that of capital formation through investment and savings. Capital investment was seen as a necessary albeit not a sufficient condition for growth. This view was confirmed by Harrod-Domar-type growth models, which set out this proposition stylistically (Pomfret, 1992; Todoro, 1989).

The benefits of economic growth were assumed to be pervasive. It was thought that growth would "trickle down" through the entire economy and that its benefits would be spread by markets and would raise the demand for labour, increase productivity and wages, and lower prices. Moreover, if markets concentrated benefits, governments would have the legitimacy to intervene and correct them (Streeten, 1979).

Experience has demonstrated, however, that the trickle-down process was overrated. In the developing world, growth brought with it an absolute and relative decrease in the share of income accruing to the poorest groups (Lisk, 1983). From 1945 to 1965 not only sectoral and spatial dualism increased, but also rural and urban unemployment (Eckert, 1994). The net effect was an increase in both relative and absolute per capita income poverty. This happened despite the fact that a substantial number of developing countries recorded positive growth rates in this period (Todoro, 1989).

2.2.3 Development as Growth modified by Social Objectives (1965-1980)

The disenchantment with development as economic growth led to the articulation of a number of development strategies that moderated and legitimised social goals to support the growth objective. Their principal aim was to spread the benefits of growth more equitably. Arndt (1987) explains that this signified a shift away from the means of development to a deeper concern with the ends. There was also a growing acknowledgement that the causes of deprivation or underdevelopment were not purely technical, but were linked to structural factors (Weaver and Jameson, 1981).

2.2.3.1 Employment and Redistribution

Research missions in the early 1970s to countries such as Columbia, Sri Lanka and Kenya showed that the poor were concentrated at the periphery of the formal economy and were either unemployed or underemployed. The absence of strong links to the formal economy was cited as the main reason why growth did not trickle down to them. The stimulation of **productive** employment opportunities was seen an effective growth distribution mechanism. Accordingly, the growth objective was extended not only to reflect the maximum rate of output, but also the maximum rate of labour absorption (Lisk, 1983; Arndt, 1987; Weaver and Jameson, 1981).

The concern with employment lead to a greater emphasis on human capital and education as a means of increasing productivity. On one level this signified a growing awareness of the centrality of people to the process of development, which is exemplified in the following quote from Arndt (1987):

> "The fundamental problem is no longer considered to be the creation of wealth, but rather the capacity to create wealth, and this capacity resides in the people of a country. "It consists of brain power" (Singer in Arndt 1987:60).

Distributional issues continued to receive attention. Consensus was reached that "distribution [could not] be left as a fortuitous by-product of growth and [had to] be made a conscious and explicit element of policy"(Arndt, 1987:100). Consequently redistribution was introduced as an explicit development policy objective alongside that of growth. Redistribution with growth (RWG) became the alternative strategy, with redistribution coming from increases in income (Livingston, 1982).

Incremental redistribution, as some labelled RWD-type strategies, were seen as preferable to outright wealth redistribution. Its policies were aimed at ensuring the benefits of growth trickled down to the bottom 40 percent of the population. Simultaneously, a RWG strategy avoided the political ructions associated with asset redistribution (Arndt, 1987). The types of policies it advocated were aimed at helping to change patterns of land distribution, improved

access to education and better health facilities (Lisk, 1983). These types of policies were given a clearer formulation and articulation by the basic needs approach.

2.2.3.2 Basic Needs Approach

The failure of economic growth to translate itself into a meaningful reduction in absolute poverty prompted the search for a new development approach. The International Labour Organisation (ILO), supported by other international development agencies, presented the basic needs approach (BNA)[4] as an alternative.

BNA was premised on the alleviation of absolute poverty through the satisfaction of basic needs. Rather than eliminating poverty indirectly via growth, BNA proposed to do it directly through meeting the absolute needs of the poor (Hettne, 1995). As such, BNA represented a development strategy[5] rather than a theoretical alternative to development as growth model. BNA was a strategy to facilitate the trickle down process, which was accompanied by strategic objectives. The strategic objectives of the BNA were:

- to increase the capacity of the poor to generate and secure an income;
- to ensure that poor households were the targeted beneficiaries of public goods and services;
- to ensure that public goods and services did in fact reach the household; and
- to ensure that the poor participated in determining the way in which their needs would be met (Streeten, 1979).

The BNA was attacked from two fronts. Both the viability of the strategy, as well as the philosophical nature of "needs", were questioned. The idea of "needs" is complex. The debate centred on whether "needs" should be considered absolute, objective standards, applicable to

---

[4] Arndt (1987) points out that while the term Basic Needs as a slogan was only adopted by the broad development fraternity after 1975, it had already appeared in the work of Dudley Seers in 1969 and Mahbub ul Haq in 1971. Neither seemed to attach any significance to the concept and used it descriptively to refer to the minimum consumption basket of goods and services which the minimum income was supposed to purchase (Arndt, 1987).

[5] Properly speaking the BNA is not even a unique development strategy per se, but instead it promotes a distinctive ordered set of policy objectives (Weigel, 1986:1423).

all societies at all times, or whether they were culturally and socially relative. The question raised was: *Can a set of basic needs, applicable to all countries be defined, or should each nation choose a set of basic needs which includes and reflects their specific social and economic parameters?* (Hettne, 1995). The position the ILO and the majority of other BNA supporters adopted was that the idea of basic needs was a "country-specific and dynamic concept" (Weigel, 1986:1424). The problem with this stance is that everything and anything could then be classified as a basic need depending on what a society considers important, for example, an expensive car or private tuition could be considered indispensable. If this is accepted, the BNA effectively becomes a redistribution strategy (Weigel, 1986).

The architects of BNA were adamant that this was not the case. While they agreed that there might be some similarities between a redistribution strategy and the BNA, they argued that there were also important differences. "Feeding the hungry, clothing the naked and succouring the sick", had an emotive appeal redistribution lacked, which made it easier to canvass support. Moreover, the BNA was not seen to affect the interests of the rich in quite the same way that redistribution would do. To the contrary, it was argued that it may actually indirectly benefit them (Streeten, 1984).

Another problem with BNA as a strategy was that it remained confined to the Western academic halls and the well-meaning international development agencies, where it had originated. In the developing world few took notice. Their leaders perceived basic needs and economic growth as trade-offs. LDCs believed they would weaken their relative position in the global hierarchy of nations if they supported and adopted BNA (Arndt, 1987).

Streeten (1979) sums up the primary contribution of the BNA to the theory and practice of development. Under the tutelage of BNA, the concept of development became "less abstract more disaggregated, concrete and specific" (Streeten, 1979:30). There were others who rejected the notion that the BNA brought anything new or original to the development debate, branding it as empty rhetoric:

> "Basic needs became a slogan of action and in their enthusiasm some referred to them as a new theory of economic development. The theoretical foundations of basic needs are

> shaky. Basic needs are nothing more than income redistribution in favour of the poor, who are targeted to receive the early benefits of growth instead of waiting until the fruits of economic betterment trickle down to them." (Afxentious 1990:85).

By all accounts much of the enthusiasm BNA injected into development studies had waned by the 1980s. The economic and ideological pressures of that period could neither sustain nor resuscitate the BNA debate. Development studies therefore entered the 1980s without a clear theoretical framework.

2.3 SUMMARY: THE NEO-CLASSICAL DEVELOPMENT PARADIGM (1945-1985)

The term "paradigm" has multiple associations. Generally speaking, a paradigm is a representation of reality, a "world view", that is accepted by the scientific and intellectual community. The significance of a "paradigm" is that it helps plot issues and contextualise them within this shared frame (Weigel, 1986).

The Kuhnian theory of scientific progress holds that as long as a specific "paradigm" can adequately reflect reality and internalise issues and contradictions, it remains uncontested. However, intellectual progress occurs when the adopted paradigm cannot deal with the questions asked and has to be replaced with a more accurate version of reality[6] (Weaver and Jameson, 1981). Hettne (1995) and Crocker (1991) both argue that this notion of scientific progress is more applicable to the natural sciences than to the social sciences. In the social sciences paradigms tend to accumulate rather than replace one another. Hettne (1995) explains that in the social sciences paradigms not only serve a descriptive and analytical function, but also an ideological one. The concept of a paradigm as a heuristic device, however, helps to isolate the constitutive elements of the "world view".

---

[6] Weigel (1986:1423), referring to Kuhn, points out that it is also possible for a specific paradigm to become so entrenched that it actually delays intellectual progress. This happens when issues which "cannot be stated in terms of the conceptual and instrumental tools the paradigm supplies", are brushed aside, considered beyond the subject boundaries.

Weaver and Jameson (1981) suggest that in the case of a development paradigm four distinct elements or blocks can be identified:

- **value assumptions**, which relate to the goals or ideals the paradigm attempts to realise and centre on what constitutes the "good life" and the "good society";
- **a criterion** or measure of development by which to assess its performance;
- a **general methodology** in which the mechanics of the development process are laid out;
- a **strategic component**, which specifies the policy action necessary to support and promote development.

Up until the 1980s Development Studies was supported by one underlying development paradigm, the so-called neo-classical or orthodox approach, that is, the growth model. The values underlying this paradigm described the good life in terms of the consumption of goods and services. Following from this the "good society" was defined as one that provided a high level of material wealth for its citizens. The success criterion this paradigm supported was the highest rate of GNP possible. This criterion later became subject to distributional constraints.

The methodology the orthodox paradigm embodies was elementary, based on the following production function:

Q = f(K, L, NR, T, En), with Q=output. K=capital, L=labour, NR=natural resource, T=technological change, En=entrepreneurial ability.

This function suggested that an increase in output (growth) could be brought about by a positive change in any one of the production factors. In this perspective underdevelopment was attributed to three main causes which retard or inhibit the growth process. These include:

- **Obstacles to growth**: These relate to the presence of a structural feature in the economy, which impedes growth. Factors included are culture, resource endowment and "genetic strains in people", which are all factors that are difficult or impossible to change.
- **Missing factors**: One of the production factors is absent or of low quality.

- **Vicious circles**: In this case the mechanism of economic growth is unable to work effectively. A low rate of savings, for example, leads to a low rate of investment, a low rate of growth, in turn, leads to a low level of savings (Weaver and Jameson, 1981).

The orthodox paradigm supported a variety of development strategies such as capital investment, human capital investment, employment, redistribution and finally basic needs. These were policy initiatives aimed at promoting growth and ensuring that its benefits were equally distributed.

In the 1970s it became clear that this paradigm was fundamentally flawed. Technically this view could not accommodate the dialectic nature of development, but, more importantly, it could not justify the values that underscored it. These were derived from a larger, more embracing, social project - modernisation. From the mid-1960s modernisation began to lose legitimacy and by the end of the 1970s the underlying ideology supporting development had disintegrated.

The underlying methodology of development was also questioned. The Dependency School contested the orthodox paradigm's interpretation of underdevelopment. Finally, on a strategic level the development strategies advocated could not be implemented because state intervention and planning did not suit the ideological-institutional climate. The following section will examine the three levels of critique.

2.4 CRITIQUE OF THE ORTHODOX DEVELOPMENT PARADIGM

2.4.1 Modernisation and the orthodox approach

Modernisation became a "buzz word" after World War II in much the same way as development did. While orthodox development was a theory of economic change, modernisation was a broader theory of social evolution or progress. Briefly, modernisation discourse examines societies and then grades them on a linear continuum ranging from

traditional, transitional to modernised (Dube, 1988). For the modernist, human progress occurs when an evolutionary step forward along this continuum is observed. Modernisation is both a goal - the realisation of a modernised society - and a process.

As a process, modernisation was seen to have specific economic, social, political and cultural dimensions. Economically, modernisation was seen as industrialisation, urbanisation and the technological transformation of a traditional agrarian economy. Socially, it was associated with the weakening of traditional ties and partisanship, while politically, democratisation and the general institutionalisation of political life was viewed as a modernisation objective. Lastly, on the cultural front, modernisation implied the secularisation of society based on the persuasiveness of scientific rationality (Ingham, 1993).

As a goal modernisation also had a specific ideological bias attached to it. Its main purpose was the establishment of a global "common behavioural system", fashioned on the "urban, literate and participative societies of Western Europe and North America." (Dube, 1988:17). Development and specifically economic growth was seen as crucial to the modernisation process - an idea that stemmed from the work of Walt Rostow. As an economic historian, Rostow identified five specific economic stages or periods through which developed countries had progressed. These were the:

- traditional period – with an agrarian based economy, characterised by low investment and savings
- preconditions period- with growing diversification of the economy accompanied by some social and political change
- take-off period - a period of sustained economic growth and increasing economic specialisation
- drive to mature period- a period of more broader-based growth with specialisation in an increasing number of areas, together with a stable social and political framework, which provides a favourable investment climate
- high mass consumption society - with increasing per capita growth based on diversified economic growth (Pomfret, 1992:20-21).

Rostow explains the significance of these evolutionary stages:

> "These stages are not merely descriptive. They are not merely a way of generalising certain factual obligations about the sequence of the development of modern societies. They have an inner logic and continuity... They constitute, in the end both a theory about economic growth and more general, if still highly partial, a theory about modern history as a whole (Rostow in Todoro, 1989:64).

This Westernised view of societal change held until the mid-1960s. From that period on it came under increasing attack from the Third World. The foundation of Western values and the goal of a "high mass consumption society" were seriously questioned. One probing question that was asked was "Whose modernisation, and for what purpose?"

2.4.2 Radical Counterpoint: Dependency theory and Neo-Marxism

Development, conceived and fashioned as modernisation, was therefore not universally condoned. While the sources of critique were numerous, the Latin American dependency school was the most influential (Hettne, 1995). Orthodox theory conceived development and underdevelopment as opposite poles of a linear continuum. In contrast, dependency theorists held that underdevelopment was the product of development. Thus rather than associating development with progress, they saw it as a process of "domination and exploitation" (Ruccio and Simon, 1992:119).

> "Dependence is a conditioning situation in which the economies of one group of countries are conditioned by the development and expansion of others. A relationship of interdependence between two or more economies and the world trading system becomes a dependent relationship when some countries can expand only as a reflection of the expansion of the dominant country, which may have positive or negative effects on their immediate development. (Dos Santos in Hettne, 1995:93)

Dominant countries were the more "developed", "industrialised" and "advanced", while dependent countries were "poor", "undeveloped" and "peripheral" (Arndt, 1989:121). In the dependency view, the dominant countries make up the core of the world economy and dependent countries its periphery. Moreover, the position of the core is maintained by its ability to subordinate the peripheral economies (Smith, 1995:21).

The essence of dependency theory is revealed by contrasting its view of the causes of poverty with that of modernisation. Poverty, according to a modern perspective, exists because the poor, as a result of "social values and attitude", fail to take advantage of opportunities for "self advancement". The culture of the poor and their status as the "poor" effectively inhibit them from participating in societal progress. In contrast, dependency theorists see poverty resulting from a lack of opportunities for the poor. They lay the blame for this on advancement of privileged core sectors (Emmett, 1989:4).

The implications of dependency theory are that underdevelopment is not a stage in history, but is created. Given this, underdevelopment must not be seen as a phase, rather, it is a "permanent feature" (Dube 1988:43). Dependency is therefore perpetuated. The primary causes of this perpetuation is the ability of core economies to dominate world resources and commodity markets, to have privileged access to scarce raw materials and to have the capacity to subvert the political structure and economic plans of less developed countries (Dube, 1988). International aid is ineffective to prevent this, since it succeeds only in temporarily relieving the symptoms of underdevelopment rather than in addressing the cause.

In the late 1970s it became clear that dependency theory did not present a real threat to the hegemony of modernisation theory. It did not offer a coherent theoretical alternative. What it did do, is help intensify the search for an alternative to modernisation and growth-conceived development. As Arndt (1987:47) puts it:

> "Dependency as the key problem of underdevelopment, at least in Latin America, was taken up and adumbrated by many other who were not Marxists or advocates of revolution. It served well to express both the frustration felt by Latin American intellectuals about the failure of Latin America to match its achievements in Europe and North America and the resentment of the overwhelming power and presence of the United States".

2.4.3 Neo-liberalism and the development impasse of the 1980s

Development theory promised the 'Third World' that it would eventually catch up to the 'First World'. By the 1980s it was obvious that the reverse was happening. The income gap

between the two widened (Schuurmans, 1993) and there was very little that could be done to reverse this. The foreign debt crisis of the 1980s meant that all long-term development strategies had to be deferred. Short-term stabilisation policies aimed at crisis management dominated most development strategies. The rise of Development Studies had been based on the implicit idea that it could challenge poverty or, at least, make a positive contribution. This had, however, not materialised.

The resurgence of neo-liberalism in the early 1980s can be traced to the oil crisis of 1973. At the end of 1973 the price of oil increased dramatically as a result of the cartel action of a number of oil producing countries. These oil price shocks, as they were called, exerted tremendous inflationary pressure on the global economy and strong medicine in the form of monetarism and increased economic liberalism was called for. The neo-liberal perspective of "freeing markets and slimming government(s)" found an easy hold (Chambers, 1991:262). This idea was soon transmitted to the developing world, amplified by the impressive growth performances the Asian Tigers[7] enjoyed. The poor growth record of the majority of developing economies seemed to suggest that government intervention in the economy was counterproductive (Sen, 1986). The conclusion which emerged was that underdevelopment was symptomatic of poor resource allocation due to incorrect pricing (Todaro, 1989). The structural adjustment programmes administered by multinational development agencies such as the International Monetary Fund, supplied neo-liberalism with additional ammunition. Development aid came with definitive "market freeing " attachments, which could obviously not be reconciled with the interventionist basic needs development approach.

2.5. CLOSURE

The orthodox development paradigm had rested on three main pillars, "growth, planning and aid". Events of the 1980s all but erased these terms from the development copy book and the internal and external image and dynamics of the discipline were profoundly affected.

[7] These high performing Asian economies include: South Korea, Taiwan, Hong Kong and Singapore (Sen 1983:38).

Development Studies lost both face and faith (Hettne, 1995). The latter part of the 1980s was therefore a period of contemplation and inquiry.

Schuurmans (1993:32), amongst others, concluded that the idea of "one grand and glorious development metatheory" was no longer feasible and gradually a broad range of multidisciplinary, context-dependent, content-orientated, development ideas began to emerge. While these ideas were diverse, they all shared a common preoccupation with the more marginalised and dispossessed members of society (Van Zyl, 1995; Schuurmans, 1993; Hettne, 1995).

These theories provided one strand of the new non-doctrinaire theory of human development that would emerge in the 1990s. The other strand can be traced to the work of Amartya Sen and his notion of capabilities and entitlements (Desai, 1991). Using these concepts, Sen helped to re-orient development away from economic magnitudes to a broader, more genuine concern for people. The following chapter will trace and appraise the importance of these two separate contributions. It will also be shown how these two strands can be causally linked, to form a `new interpretive development paradigm'[8].

[8] This is a direct reference to an article by Weigel (1986) in which he argues the necessity of taking the development studies beyond growth and the BNA, and settling it on an entirely "new interpretive development paradigm". The chapter that follows argues that human development is such a paradigm.

CHAPTER THREE

HUMAN DEVELOPMENT: AN ALTERNATIVE DEVELOPMENT APPROACH

> "It is an unfortunate accident of history that we are so ill prepared on a theoretical level, to adequately comprehend, much less respond to the challenge of world poverty. Obviously it takes far more than a good theory to mount an effective response against absolute poverty; however a *credible conceptual framework* for action is an absolute necessary ingredient in mounting a sustained response over the next 50 years (Weigel, 1986:1432).

3.1 INTRODUCTION

The objective of this chapter is to flesh out the theory of human development and demonstrate that it offers a "credible conceptual framework" for measuring and addressing development and poverty. As indicated in Chapter Two, the human development approach is based on two separate but related strands of thought. The first of these originates from an eclectic body of development research loosely titled "Social Exclusion Theory" or "Perspectives of the Excluded". This perspective identifies important themes the neo-classical development approach failed to reflect in its theoretical and methodological structure, and is primarily a response to the inherent limitations of the neo-classical model in identifying who or what gets marginalized in the process of development.

The second strand of the human development approach is the Capability Ethic formulated and refined by Amartya Sen. This approach establishes the philosophical and theoretical foundations of human development. More specifically it clarifies the question: "What is wellbeing, how do we measure it and how is it linked to development and poverty? The ensuing analysis will analyze these two separate strands of the human development approach and show how they can be causally linked to construct a theory of human development.

3.2 SOCIAL EXCLUSION THEORY

Contra-modernization, as Beukes (1989) prefers to call social exclusion, is a range of fragmented theories joined by a shared belief that the content of development (its meaning and purpose) is more important than its form. These diverse views or approaches converge around the theme of alienation or exclusion and its adherents focus on giving voice or drawing attention to those whom development processes have left out.

The topic of development and alienation was sparked in the 1970s by a series of international conferences and publications. The Declaration of Cocoyoc and a report prepared by the Dag Hammerskjöld Foundation for the United Nations emphasized how the process of development induced alienation and marginalization of people and the environment. As signs of these trends were also evident in developed countries[9], the development goal of 'high mass consumption' was fundamentally flawed. The Hammerskjöld Report was aptly titled: What Now-Another Development. More specifically this view claimed that the benefits of development, and implicitly its costs, were not evenly distributed. Sectors and sections of societies were left behind or left out. Social exclusion is therefore defined as the "process through which individuals or groups are wholly or partially excluded from full participation in the society in which they live" (European Foundation in Laderchi *et al.,* 2003).

According to Atkinson (cited in Laderchi *et al.,* 2003), three main characteristics define social exclusion. The first of these concerns relativity, that is to say the exclusion is relative to a particular society and it is an exclusion from normal social patterns or relationships. Secondly, the excluded occupy their position as a result of the action of an agent or agents, for example discrimination. The final characteristic of the socially excluded is the persistence of the existing dynamics, meaning that future prospects do not differ from current circumstances (Laderchi *et al.,* 2003). For the purpose of this dissertation the following social exclusions will be examined; so-called beneficiaries of development, people's cultures,

---

[9] The term "Social Exclusion" was first used by Lenoir, French Secretary of State for Social Action in Government in 1974. He used the term to refer to people who did not fit into the norms of industrial societies; those not protected by social insurance and those considered as social misfits. Lenoir included, amongst others, the handicapped, drug users, delinquents, the aged (Laderchi *et al*, 2003).

women and the environment. If poverty is to be addressed these issues need to be reflected in the analysis and critically engaged with to ensure the inclusively of the development process as well as to reshape the social processes by which people come to be excluded.

3.2.1 Participation

> "Modern jargon uses stereotype words like children use Lego toy pieces. Like Lego pieces words fit arbitrarily together and support the most fanciful constructions. They have no content, but they do serve a function. As these words are separate from any context, they are ideal for manipulative purposes. Participation belongs to this category of words (Rahnema, 1990:116).

Rahnema (1990), while possibly overstating the case in the above quotation, draws attention to the fact that "participation" as a concept, has been used by a large number of ideologically diverse groups to serve an equal number of divergent ends. Moreover, this "abuse" has largely gone unchecked due to the fact that the meaning assigned to participation has continuously evolved, and that this evolution has followed, and in some cases mirrored, the changing conceptualisation of development. In the 1990s these concepts fused, producing 'participatory development', a model of development that attempted to "meet the needs and aspirations of the people through their direct involvement"(Goulet, 1995:316).

Participation first became part of the development lexicon in the 1960s and early 1970s. It was during this period that the "development as growth" model was broadened to include a number of social objectives and thus an increasing proportion of international development aid came in the form of project support. In this context participation referred to the need to involve people in specific projects and programs, the emphasis was on the "mobilisation" of people and communities (Ghai, 1990:82; UNDP, 1983). In the 1980s participation assumed a political undertone. The accent shifted from mobilisation of people to the decentralisation of state machinery and resources (Ghai, 1990). Decentralisation implied a spatial shift of the physical loci of government and state resources away from the 'commanding heights' to local communities. For the international development community, this move was more than welcomed as decentralisation offered a solution to the problem of excessively large bureaucracies typically found in developing countries. However it soon became clear that

decentralisation did not, per se, facilitate people's participation. All it may have brought was a better opportunity for local elites to dominate[10] since there is no direct correlation between decentralisation, democracy and empowerment (Griffin and McKinely, 1994; Ingham, 1994).

Korten (1984:300) suggests that genuine participation grants the individual the role of actor rather than subject: "He who defines the goals, controls the resources and directs the processes affecting his or her life." This definition suggests that participation is about empowerment, about increasing the control people exercise not only over resources and institutions, but also over their own lives (democracy). Ghai (1990) agrees that participation should be equated with empowerment, but specifically empowerment of the poor. This is only possible if democratic, independent and self-reliant communities are created. The poor must help themselves and draw on their own strengths. As such, participation becomes the goal of self-reliance. Self-reliance offers all people a "chance to participate in their own humanisation" (Freire in Ingham 1994:45).

3.2.2 People's culture and culture-sensitive development

Culture is a notoriously difficult concept to define and reflect. Thus, it is not surprising that while the majority of development scholars reiterate the importance of culture-sensitive development, few explore its meaning and implication (Hettne, 1995). Allen (1992)[11] understands culture as "a shared set of values". Banuri (1990:77), more eloquently describes culture as:

> "...a map of the universe we carry in our heads, and which enables us to integrate our values, choices and actions. It is a design for living, a filter through which we assimilate all experience, physical as well as social which enables us to act in situations presented before us."

Marglin (1990:15) explains the significance of this map. For the human species culture, as opposed to instinct, is the principal channel for the transmission of intergenerational

---

[10] See Griffin and McKinley (1994:120-122) for examples of how decentralisation dis-empowered societies and communities.

[11] Allen (1992:344-346) supplies a broad and informative typology of the different conceptualizations of culture. His typology attests to the importance of defining fuzzy concepts.

knowledge. While each individual's cultural map is unique, members of a specific community share elements that make up their common culture. A large component of the modernisation project was aimed at establishing a common behavioural pattern through the diffusion of Western values. In the biological world, a diverse gene pool is considered a prerequisite for long term ecological balance. Cultural diversity should be embraced for the same type of reason. The argument goes that since we do not know what future challenges humanity will meet, it is only through preserving a variety of forms of "understanding, creating and coping" that humanity can ensure its future (Marglin, 1990:16-17). Following from this, the trend towards mono-culturalism, which modernisation supported, should be rejected and culture-diversity supported.

A rejection of modernist values is not an endorsement of static traditionalism or "backwardness". To the contrary:

> " [t]raditional does not mean fixed or unchanging. Tradition is actively constructed and dynamic - except when it is artificially frozen in an archaic pattern. The issue is the preservation of a space for a relatively autonomous transformation of indigenous cultures, not the preservation of cultures as static system" (Marglin, 1990:16).

Culture should also not be seen as an obstacle to development. It is rather its compass, a navigational device, which helps plot the course of development. "It is each person's culture which decides for them what is a good life" (Verholst, 1982:160). Culture-sensitivity stands in support of this, and entails not judging "their" society by "our" cultural values (Glover, 1995).

Intuitively this ethical-relativist position appeals to our post-modern sensibilities with its emphasis on "local, contextualist [and] parochial" (Benhabib, 1995:235). One implication of accepting ethical relativism, however, is that it strips away all power to make moral pronouncement on another's culture and practices. We cannot, for example, judge societies that condone racism and sexism as unjust and repressive if this is their normal social pattern (Nussbaum, 1995a:66). Such criticism, the relativist argues, is cultural imperialism and thus culture-insensitive.

Only if universalism is accepted over relativism, are judgements on "their" culture permissible. Universalism supposes that there are some values (moral categories) that are objective and universal, that is, they transgress cultural boundaries. These values are supposedly shared across cultures, and their application allows moral judgement to be passed on another's society and practices. The question to ask is whether such evaluations represent the "paternalistic imposition of some people's ways upon others" (Nussbaum, 1995b:5).

Universalism, to its detriment, has a tradition of being culturally repressive. Modernisation is for example a universalist doctrine. Depending on how the universal values are derived and specified universalism need, however, not be insensitive to culture. Benhabib (1995:252) goes further to state the reason for this:

> "What a universalist ethics seeks to establish is that in the face of needs and suffering, we have to engage in moral conversation and action; that we cannot abdicate our responsibility of responsiveness to the other with facile arguments about cultural relativity. As long as we can understand another's language, more or less, we need no further proof of their shared humanity with us; they are partners with us in the communication community. We will discover what separates us as well as what unites us in the course of the conversation. Ironically in order to understand how different the other really is from us, we must first respect that other is a human being like us; we must begin with the attempt to understand and converse. *Recognition of cultural differences is predicated upon the recognition of a common humanity*" (Benhabib, 1995:252)"

In conclusion, it is not good enough to say development must be culture-sensitive, the concept needs to be further analysed. Culture-sensitive development recognises and respects that individuals are members of local communities. Simultaneously it recognises our common humanity. The distinction between "us" and "them" is fluid. However, dialogue on both a local and global scale is needed to prevent universalism from sliding into imperialism. Communities of conversation need to be constructed with the aim of finding out which values are universally embraced.

3.2.3 Women and development

Development processes have tended to exclude women as a group (Hettne, 1994). The effect of this exclusion is to render women more vulnerable to deprivation than men. Sen (1989b)

suggests that, while a small part of this vulnerability can be traced to biological differences between men and women, more often than not, it is socially engineered[12].

Vulnerability is a complex notion, meshed and imbedded within the broader social fabric. However, superficially economic vulnerability appears to underscore and encourage social and political vulnerabilities[13]. Economic vulnerability manifests itself in a variety of forms and is tied to the labour status of women. As workers, women are more often found in the lower paying marginal economic sectors. Standing (1989), for example, points out that a disproportionate percentage of those employed by small-scale enterprises are women. Moreover, their labour status is often precarious. Women make up the bulk of the part-time and casual workforce, where they are more susceptible to business cycles. As unpaid domestic labour, women's economic status is indirectly dependent on the income of their spouse or family. Yet, it is when these ties are absent or severed, that women's vulnerability to poverty is exacerbated (Standing, 1989:1092-1093).

Development Studies officially responded to this vulnerability in the 1970s with the United Nations declaring 1976 to 1985 the Decade of Women and introduced the concept Women In Development (WID). WID considered that "women's'' main problem in the Third World was insufficient participation in an otherwise benevolent process of growth and development" (Sen and Grown in Bunch and Carrillo 1990:74). All that was required to reduce inequalities between the genders was a "space" for women to participate in. However, Hettne (1995) states that the "add women and stir approach", which mainly consisted of a collection of insights as to how to increase the participation of women "at the margin" failed to offer a theory of genuine female empowerment (Jarquette, 1990).

---

[12] Here Sen (1989) is referring to biological differences related to reproduction and physical strength.

[13] Chen (1995) points out, for example, that many feminists support the view that the ability of women to command personal and public recognition is dependent on their ability to actively participate in the labour market.

In the mid-1980s, it was largely through the efforts of feminists that WID was transformed into GAD (Gender And Development). GAD questions the basis upon which gender[14] roles are assigned. "GAD is not concerned with women per se, but with the social construction of gender and the assignment of specific roles, responsibilities, and the expectations of women and men" (Rathberger, 1990:494). The argument goes that since men and women's lives are structured in fundamentally different ways, development policies and programmes affect them differently. It is because of this difference that GAD demands for women "not just a bigger piece of someone else's pie, but a whole new dish, prepared, baked and distributed equitably" (Momsen in Hettne, 1995:88).

Despite twenty years of recognition and activism on the part of developers, gender equality has only really become a mainstream development issue in the last ten years. Okin (1995) ascribes this to two main causes. The *s* is the false dichotomy economists make between the public and private sphere. This is illustrated by the choice of the household, a supposedly benign institution, as the unit of analysis. Households are resource allocation mechanisms that yield particular outcomes. It cannot be assumed that intra-household distribution is equal nor equitable. The household is a site of both co-operation and conflict. Intra-household allocations are the result of the relative bargaining power of individual members within the household. This power, in turn, depends on the members' bargaining power outside the household[15]. The inferior status accorded to women outside the household means their claims for household resources may be weak viz-a-viz those of men (World Bank 1990). The *second* reason for the persistence of gender inequality, is methodological failure. The gendered disaggregation of data has only recently become part of the development research methodology, with the result that the extent and consequence of gender inequality is only just beginning to be fully comprehended.

Facilitating the elimination of gender inequality requires a commitment to supporting gender-sensitive development, which can be promoted *firstly* by seeing the whole economy and not

---

[14] Gender refers to socially constructed and culturally determined characteristics. In contrast 'sex' i.e. male/female refers to those characteristics which are biologically determined.

[15] This points to the need to use Nash-bargaining models to assess intra-household allocations rather than using the unitary model traditionally favoured by economists (Haddad and Oshaug 1999).

restricting one's view to the visible formal economy. The irregular sector and the social economy, including the voluntary and domestic sector, must be considered and the position of women in them noted. *Secondly,* assumptions about dependency need to be analysed. For example, resource and information flows directed towards the male household "head" are not necessarily resources for the family. Any support system designed to assist the genuinely dependent in the household needs to be channelled through women. *Thirdly,* support for women's organisations needs to be guaranteed, and women's organisational skills nurtured (McKintosch, 1993; Haddad and Oshaug, 1999).

3.2.4 Sustainable Development

The need to integrate environmental concerns into the development concept became obvious in the 1980s. This debate was prompted and maintained by a series of international publications dealing with the environment and development. The World Conservation Strategy [16](IUCN), dealing with both conservation and development, was published in 1981. This was followed by the Bruntland Commission's report to the United Nations General Assembly in 1987, entitled "Our Common Future". The document demonstrated the shared link between the environment and poverty. It argued that poverty was simultaneously the cause and effect of environmental degradation (Adams, 1993). These events succeeded in "greening" development, with sustainable development becoming an integral part of the development vocabulary. The Bruntland Commission chose to define sustainable development in a pragmatic way as "..meeting the needs of the present without compromising [or excluding] the ability of future generations to meet their own needs." (Adams, 1993:208). Sustainability implies "making things last, making them permanent and durable"(Pearce, 1992:69), and the goal of sustainable development is the creation of a "sustainable, humane and just society" (Batie, 1991).

Implicit in much of the sustainable development literature is the inherent normative associations of the concept, specifically the need for sustainable development to promote

---

[16] The World Conservation Strategy was a consensus document. Its three main objectives were; the maintenance of essential ecological processes, the preservation of genetic diversity and the sustainable utilisation of resources.

justice (Pearce, 1992). Under justice it is understood that sustainable development should contribute to the equitable distribution of resources in society (intra-distributional equity) as well as across generations (inter-generation equity). Inter-generational equity means conserving resources for the use of future generations and intra-generational equity an equitable distribution of wealth and resources within a society (Murdoch *et a.,l* 1994:392). These conceptions of justice should not be seen in isolation.

> "To squander the birth right of the unborn is something responsible people and societies would wish too avoid. But its emotive undertones should not be allowed to distract attention from the grossly unequal access at present. There is a risk that arguments concerning the wealth of future generations can be used to ration access to resources in such a way that existing inequalities will be compounded" Murdoch *et al.,* 1994:266).

A unifying feature of the myriad of sustainability definitions is their belief that sustainability does not mean the status quo. There is a level of agreement among those working and thinking about sustainability that current development strategies are not sustainable in the long term. However, what they consider remedial action depends on whether they are classified as "progressives" or "environmentalists" (Batie, 1991). The "progressives" adopt the view of resource management. They work from the premise that the capital stock is made up of a combination of physical, human and natural capital. As long as the total stock is constant or rising, development is sustainable. Infinite substitutability between the capital types is assumed. As long as capital is managed in such a way that the total stock remains constant, development may be classified as sustainable. The management of natural capital is "implementing the right incentives to produce solution orientated technologies, implementing the right prices to internalise the externalities as well as using natural resource accounting." (Batie,1991:395).

Strict environmentalists see a reduction in the level of overall global economic activity as necessary for sustainability. They blame environmental degradation on economic growth and call for "zero growth". Murdoch *et al* (1994) caution that the cause of environmental degradation does not rest with growth per se, rather with environmentally unconstrained growth. What is really necessary, they argue, is a shift in the content of growth away from environmentally damaging products and practices.

In conclusion, sustainable development is imbued with a variety of meanings and associations and, as such, is more of a problematique than a theory (Adam, 1993), which identifies that in the long run development must adapt itself to the underlying resource base that supports it (Hettne, 1995:206).

3.3 THE CAPABILITY ETHIC OF AMARTYA SEN

The Social Exclusion Theory is essentially a critique of the values, methodology and strategy of the neo-classical development approach and does not, as such, offer an alternative conceptual framework. Such a framework is found in the work of Amartya Sen. Since the 1970s Sen has focused on a broad range of economic, social and philosophical issues. By employing the "Capability Ethic", he has integrated these ideas into a single conceptual framework. Sen has, however, not confined his work to theoretical abstractions. To the contrary, it was largely through his efforts that human development, a practical derivative of his capability approach, has been widely accepted by the general development fraternity.

For Sen, the measure of a developed society is the extent to which it empowers its citizenry to "live and act in certain valuable ways" (Crocker, 1995:153). Consequently, development must focus on removing the constraints or barriers that inhibit people from achieving a worthwhile life. Development must "emancipate people from the forced reality to live less or be less" (Sen, 1984a:510) and focus on improving their overall level of wellbeing (Sen, 1988:15).

The focal variable of Sen's development approach is wellbeing. This is not a new idea. The promotion of wellbeing has long been the motivational force behind Development Studies specifically, and economics generally. While economics chooses “utility” as the basis of assessing or measuring wellbeing, Development Studies assessed wellbeing in terms of opulence (goods and services). Sen demonstrates that restricting the informational basis of wellbeing to either of these "spaces" is to do the complexity of human existence an injustice. Wellbeing is about being well. As such, it must be measured in term of a person’s ability to do valuable things or achieve valuable states of being (Crocker, 1995). Opulence or utility does make a positive contribution to wellbeing. However, as exclusive value-objects and

methods of wellbeing evaluation, they must be abandoned in favour of a more plural and complex interpretation.

The following analysis will clarify and specify the nature of the relationship between wellbeing and utility and opulence respectively. In addition, an alternative view of wellbeing as 'functionings and capabilities' will be presented and its ethical implications explored.

3.3.1 Wellbeing and Utility[17]

Utilitarianism proposes that the value of an action or object can only be assessed by measuring the utility it generates (Sen, 1989:45). Utility can be interpreted in a variety of ways, but viewing utility as a mental metric such as happiness or pleasure is most common. If the value of a person's living - their wellbeing - can be expressed in terms of utility, and if happiness is evidence of utility, it follows that a person's achieved state of happiness reflects his or her wellbeing[18].

Sen (1987a) concedes that happiness is indeed a valuable achievement, but he rejects the idea that happiness represents and measures wellbeing (Sen, 1985). People can be quite happy despite living a life of poverty and deprivation. He argues that their subjective consciousness can cloud their objective reality. Religion, cultural pressure or propaganda can therefore all contribute to the social conditioning of a deprived person, numbing their reality[19]. Sen (1985,1987) also questions whether any other positive mental state besides happiness, such as excitement or stimulation, can also make a contribution to wellbeing.

Alternatively, utility can be defined as desire. Utility is gained through the objective realisation of desires or wants rather than through achieving a mental state such as happiness

---

[17] A more detailed explanation of utility as wellbeing can be found in Sen (1994:187-192), Sen 1987 (7-14), Sen (1992).

[18] Traditionally, the analysis of wellbeing has used market purchase data to reflect happiness/desire fulfillment. This confuses the state of a person with the extent of his/her possessions.

[19] This social conditioning is referred to as the "physical condition neglect" and this is particularly important when seen in connection with class, caste and gender differentials.

(Sen, 1992:54). In this perspective the objective realisation of the desired value-object represents the level of wellbeing achievement. Sen (1987a) also rejects this approach.

> "The defeated and the downtrodden come to lack the courage to desire things that the more favourably treated by society desire with easy confidence. The absence of desire for things beyond one's means may not reflect deficiency of valuing, but only an absence of hope, and a fear of inevitable disappointment. The underdog comes to terms with social inequalities by bringing desires in line with feasibilities. The metric of desire does not therefore, have much fairness: nor can it reflect the strength of valuations, especially what a person would value on serious and fearless reflection." (Sen, 1987a:10-11).

"Prudential reasoning", Sen continues, suggests that those accustomed to very little adjust their expectations downwards and instead focus their desires on those things that fall within their expectation horizons (Sen 1992:55). Concentrating only on desire or desire fulfilment as a measure of wellbeing, therefore, obfuscates the true extent of deprivation.

One interpretation of utility that finds favour amongst economists is seeing utility as choice or rather a description of choice without making specific reference to any underlying psychological condition. For example if you choose A, when B is available, A supplies you with a higher level of utility than B. Sen (1987a:12) suggests that this "Revealed Preference" approach provides an even weaker basis for making ethical judgements in that it confuses the act of "choosing with benefiting". He goes further to explain that choice is valued because it is supposedly a "reflection of desire". However, what you choose depends on your motivation. Personal wellbeing may guide the process, but other motivations such as "national pride, the glory of your football team, or the benefit of your great aunt" may also influence choices made (Sen, 1987a:12).

Utility, in whichever way it is defined, expresses wellbeing and good development as features of people themselves. It is thus a highly subjective and personalised view of development (Crocker, 1992:599). While utility, be it defined as happiness, desire fulfilment or choice, may well be evidence of wellbeing, the presence of this metric is not sufficient for wellbeing and is thus an inadequate basis upon which to evaluate wellbeing.

3.3.2. Wellbeing and Commodity Possession

A more objective approach to wellbeing is the opulence or commodity possession view. In this case, the advantage of a person i.e. their level of development is measured in terms of their income or the number of goods they own. Sen (1987a) readily concedes that goods can contribute to a persons overall wellbeing, however, he rejects the idea that the amount of 'stuff' a person has is an adequate or accurate measure of their wellbeing.

Crocker identifies four interrelated arguments that explain why wellbeing should not be equated with opulence or commodity possession. The *first* of these questions the intrinsic value or significance of commodities.

> "Wealth, income and possessions simply are not good in themselves. However much people may actually be obsessed with heaping them up... What they have really, when they have them, is just a heap of stuff. A useful heap, but a heap nonetheless, a heap that is nothing unless it is put to use in the doings and beings of human lives (Nussbaum in Crocker, 1992:591).

The point being made is that commodities, as such, have no real value. Their value is derived from "what they do for people, or rather what people can do with these goods and services" (Sen, 1984a:510). Opulence, income or "stuff" are said to have instrumental rather than intrinsic value. They are the means and not the end of wellbeing. To equate wellbeing with commodity possession is to overlook this critical distinction.

The *second* argument offered by Crocker (1992) questions the link between commodity possession - "being well off"- and wellbeing. He claims that this link is conflicting and fragile (Sen, 1987a:15), weakened by what is labelled "the interpersonal variability argument" (Crocker, 1992:591). This argument is best illustrated with the help of an example: two people, Dick and Jane, who both have the same level of income. In terms of the commodity approach, Dick and Jane, enjoy a similar level of wellbeing. However, Dick is handicapped and both his overall health and mobility is less than that of Jane's. Given this, is it still possible to assume that these two people enjoy a similar level of wellbeing? Sen argues no. To enjoy a life of good health and mobility Dick needs more resources than Jane does. It therefore follows that with the same resources as Jane, Dick achieves a lower level of

wellbeing. Thus the ability to convert commodities into wellbeing varies interpersonally, and to equate opulence with wellbeing is to ignore this distinction.

Crocker's (1992) *third* criticism of the "opulence as wellbeing approach" extends the interpersonal variability argument to a societal level. Assuming, for example, that community participation is an important aspect of wellbeing, Sen (1992, 1995) explains that for the urban American, access to a telephone and television are necessary for this type of participation while, for the rural Indian they are not. Thus, for the American to achieve the same level of wellbeing as the Indian requires more commodities. The commodity requirements for wellbeing are thus culturally and historically bound (Crocker, 1992). This essentially renders trans-cultural, -regional and -national income or opulence comparisons useless.

Martha Nussbaum, an Aristotelian philosopher working closely with Sen, offers the fourth and *final* criticism of the commodity approach. Nussbaum points out that the commodity approach implicitly assumes that more of a commodity is somehow better. "Too much of a good thing can be bad. Goods and the hunger for them often make people excessively competitive, domineering, arrogant and have a mercenary attitude towards other kinds of good things" (Crocker, 1992:592).

A more stylised version of commodity possession as wellbeing approach is found in the work of John Rawls. Briefly Rawls argues that an individuals' holding of primary goods[20] is a practical method for assessing their advantage or wellbeing (Crocker, 1992:593). As such, people's holdings of primary goods can be employed to make interpersonal wellbeing comparisons. Under primary goods Rawls includes:" rights, liberties and opportunities, income and wealth, and social basis of self respect " (Sen, 1989:47).

[20] An excellent overview of Rawls's theory of justice is found in Crocker (1992) and Sen (1992). Both articles reflect the lively debate between Rawls and Sen on the significance of primary goods and their connection to wellbeing.

Rawls argues that different people have different conceptions of what constitutes the good life or wellbeing (Crocker, 1992). Primary goods are seen as the minimum requirement necessary for people to carve out their own conception of wellbeing. "Primary goods we say are things that citizens need as free and equal persons.... Primary goods are, thus, general purpose means or resources useful for the pursuit of different ideas of the good that the individuals may have."(Sen in Crocker, 1992:593)

Clearly, Rawls identifies the inter-end variation between people - that people can have different wellbeing interpretations. However, Rawls's theory does not reflect inter-personal variation, that is, the ability to convert primary goods into wellbeing. Sen (1989) argues that Rawls's position would be a good way to judge wellbeing if people were similar. However, human beings are not similar, they differ from each other in a variety of ways and this implies that equality of primary goods does not allow everyone an equal chance. Rawls makes the distinction between means and ends, but he fails to make the distinction between inter-individual primary goods and the freedom to pursue ends.

Similarly, the basic needs approach to development and wellbeing should also be seen as stuck in the mould of "commodity fetishism" (Sen, 1989:47). Basic needs were defined in terms of certain minimal amounts of basic commodities such as food, clothing and shelter. Interpersonal variability was thus ignored in the allocation of basic needs.

3.3.3 Wellbeing, functionings and capabilities

Having rejected the traditional approaches to wellbeing, Sen concentrates on offering an alternative view. The capability approach to development emphasises the wellbeing of people and sees advantage in terms of the capability to do valuable things or reach valuable states of being. Happiness and opulence do make a contribution, but it will be argued that the capability approach is information-plural. This complexity is seen as a necessity given the objective of reflecting the "doings and beings" that make up person's life (Sen, 1993).

There is nothing original or radical about seeing wellbeing in terms of the capability to function. Sen (1987b, 1989, 1993) shows how the traces of his capability approach can be found in the work of Aristotle, Smith and Marx. For example Aristotle identified how the "good of human beings " was related to the "functions of man" and the idea of "life in the sense of activity" (Sen, 1993:46). While Aristotle chose to embrace a specific notion of the `good' he recognised that the quality of life depended on the valued activities which make up the life. Similarly, Marx recognised that the success of a human life cannot be evaluated in terms of wealth or income. It should rather be evaluated according to the ability to satisfy "needed human activities" (Sen, 1989:43).

The maximisation of wealth was not Adam Smith's prime or sole concern. Smith's writings show how he appreciated that income and wealth were only the means to wellbeing and not the end. Furthermore, Smith grasped the social and historical variability of commodities. For example he identified that the same functioning of appearing in public without shame depended on the norms and customs of the society in question (Sen, 1987b)[21].

The primary focus of wellbeing has to be the life that people are living (Sen, 1988:15). While goods and services available in an economy may enhance the lives people live, to concentrate on them is to neglect what is more important - people (Sen, 1984:510). Wellbeing has to be concerned with what people can or cannot do, can or cannot be. These "being" and "doings" Sen (1988:15) calls functionings.

Functionings represent different aspects of the state of a person (Sen, 1993). They can either be activities such as working, resting and loving or they are states of existence such as being employed, being well rested or being loved (Sen, 1985). Functionings can also be viewed in a hierarchical manner. They can vary from rudimentary, such as being well nourished, to more complex such as being able to command self respect. It is on the basis of these functionings that an evaluation of a person's wellbeing is possible. "The claim is that the functionings

[21] Smith (1776) illustrated his point by use of an example:"The Greeks and Romans lived...very comfortably though they had no linen but in the present time, through the greater part of Europe, a credible day labourer would be ashamed to appear in public without a linen shirt (Smith 1776 in Sen 1984d:335).

make up a person's being, and an evaluation of a person's wellbeing has to take the form of an assessment of these constitutive elements" (Sen, 1989:44).

Closely connected to functionings is the idea of the capability to function. The capability to function is the various functioning combinations that a person can achieve, the whole set of doings and beings that are possible. More formally put, a capability set can be defined as the set of alternative functioning vectors[22] within a person's reach (Sen, 1992). Sen (1985,1987b) explains the importance of the distinction between functionings and capabilities by using the example of two people starving, Jack and Jill. Superficially, since they "enjoy" the same functioning achievement of starving, it can be argued that they have the same level of wellbeing. But Jill is a hunger striker that could also be well nourished should she choose, while Jack is a refugee and has no choice but to starve. Clearly Jill's wellbeing is higher than Jack's even though they both have the same functioning achievement of starving.

A functioning is an achievement, whereas a capability is the achievement-alternative, the "is" stands to the "possible" (Sen, 1987b:37). Capabilities are possible options or choices open to a person, possible functionings from which to choose. The hunger striker chooses to starve, but she also has the opportunity to be well nourished. The refugee only faces starvation[23]. Clearly, they do not enjoy the same level of wellbeing. The hunger striker enjoys a degree of choice the refugee does not: she has the additional functioning of choosing.

When relating functionings and capabilities to wellbeing Sen (1992:49) is emphatic: "functionings are constitutive of wellbeing while capabilities represents a person's freedom to achieve wellbeing". However, Sen (1987b) adds that these concepts are not independent. Capabilities are crucial to both wellbeing achievement and wellbeing freedom. If the act of choosing itself is seen as a valuable functioning, this achievement must somehow be

---

[22] Sen (1992:50) explains "[C]apabilties are defined in the same focal variables as functionings. In the space of functionings any point represents an n-tuple of functioning. Capability is a set of such n-tuples representing the various alternative combinations of functionings from which the person can choose one combination."

[23] The hunger striker, while having the same achieved functioning as the refugee faces a different capability set. Similarly, two individuals facing the same capability set can choose a different functioning vector (Crocker, 1995).

reflected. One way of doing this is to "refine" the functioning to such an extent that to do the "counterfactual" must also be investigated. For example Jill, the hunger striker, has the functioning of starving as well as the counterfactual functioning - not to starve, as possible alternatives. For Jack, the refugee, the counterfactual functioning achievement of not starving is not an option. Alternative opportunities can thus be reflected as refined functionings (possibilities). Wellbeing achievement is thus better reflected by wellbeing freedom.

On a practical level, the preference of wellbeing freedom over wellbeing achievement has significance for public policy. Part of the wellbeing assessment is to serve as a basis for policy. In the example of the two people starving, public policy must only be concerned with helping Jack, the refugee. The hunger striker is not in need of support given that she consciously rejects the option of being well nourished (Sen, 1992).

Sen (1985) concludes that on balance the wellbeing a person enjoys is best captured by their "refined" functioning achievements, that is, capability sets. Primarily because this approach is consistent with the view "that the good life is inter alia also a life of freedom."(Sen, 1985:202).

3.3.4 Freedom and justice: the ethical foundation of the capability approach

3.3.4.1 Freedom

Sen states that the capability set of a person represents the freedom of the person to achieve various functioning combinations. He sees freedom in a positive way: "..who can do what, rather than who has what bundle of commodities and who gets how much utility" (Sen 1984b:376). Sen (1993) argues that development occurs when an increase in freedom (choice) is brought about via an expansion of valuable capabilities. "Valuable" is an important qualification. Clearly there is no increase in freedom when "tearing one's hair out" is added to the option of "cutting one's ears, slicing one's toes or jumping through the window" (Sen, 1993:35). One weakness of the capability approach is its failure to specify what qualifies as "valuable" capabilities. Sen (1989) claims that what qualifies as "valuable" depends on the norms or values present in a society as well as the interests or motivation of the person asking the question.

The capability approach also has no way of ranking or ordering capabilities. Development is dialectic by nature, capacities (freedoms) can expand in some areas and contract in others (Marglin, 1990). Because there is no method of ranking capabilities it is impossible to conclude whether, on balance, development has taken place (Qisilbash, 1996).

For Crocker (1995) the essential value of Sen's conception of freedom is that it allows the good society to be identified. A good society would provide the material and institutional conditions to bring about freedom. A good society is a liberated society - one which affords its citizens the opportunity for a full rich life. Moreover, public policy must be concerned with creating the conditions that allow for this objective to be realised.

3.3.4.2 Justice

The capability approach rates freedom as a worthy objective of the "good society". Sen has gone further to qualify both these objectives by the norm of distributive justice (Crocker, 1995). The good society is simultaneously the just society. Sen (1992) understands distributive justice as equality of basic capabilities.

Crocker (1995:193) points out that implicit in the concept "basic equality capability" are four separate ideas which describe the 'just society'. In the *first* place the just society acknowledges that each person has title to a minimum level of freedom or wellbeing. A just society sets itself wellbeing standards below which it considers life unacceptable. *Second,* the just society is concerned with "width", *every* citizen having the right to a minimum level of wellbeing. A just society cannot thus accommodate any form of discrimination such as racism and sexism.

Third, to promote wellbeing governments are obligated to make as many public resources as possible available so that an expansion of valuable capabilities is possible. This obligation does not end once everyone has attained the agreed minimum level. Rather it exists for as long as public resources are available. *Lastly,* when public resources are limited a just society

considers it more prudent to get everyone over a minimum wellbeing level than to allow a selected few to move further along.

To summarise, Sen's capability approach provides a fresh interpretation of development. First, it suggests that the good life is a life of freedom, freedom "from the enforced necessity to live less and be less" (Qizilbash, 1996:1211). The good society is one which provides its citizens with the commodities and institutional resources necessary to realise a life of freedom. It is the objective of good development to foster the good life. Good development must strive to ensure the "capacity for choice" - that which freedom represents, "is acquired by the young, maintained by the mature, and restored (where possible) to those who lose it." (Crocker, 1995:184).

3.3.5 Freedom, capabilities and the entitlement approach

3.3.5.1 Entitlements: A description

Amartya Sen has not confined himself to the normative aspects of development theory. Working with Jean Dréze, Sen has also focused on development policy, more specifically, on the causes and remedies of famine. Dréze and Sen (1989, 1994) contend that famines are more often the result of a decline in peoples' ability to command a minimum amount of food than by a decline in food availability. They cite examples of the Bangladesh Famine of 1974 and the Ethiopian famine of 1973. In both cases food availability per capita did not decline in the famine period. Rather, negative shifts in the entitlement of big sections of the population reduced their effective command over food. Based on this Sen (1984c:452) argues: "starvation is a matter of some people not having enough food to eat and not a matter of there being not enough food to eat". Sen (1995:50) labels this the "acquirement problem".

Deprivation as a whole can also be understood in terms of "the acquirement problem". The presence of goods and services in an economy does not imply that individual or households hold an equal title to it. Acquisition power depends on entitlements, with entitlement referring to the set of alternative commodity bundles the "system" enables people to claim by virtue of their acquisition rights (Sen, 1995; Dréze and Gazdar, 1992).

A person's (household) entitlement set is a function of their original resources as well as the exchange possibilities they face. The former is referred to as a person's endowment, while the later as e-mapping, or more formally as the exchange entitlement mapping. Broadly, endowment can be seen as a "person's position in society" - the original set of resources or assets they own (Gore, 1993:431). Osmani (1995) makes a distinction between tangible and intangible endowments. The former includes things such as land and equipment while the latter includes labour power, skills, information, location and community membership.

E-mapping refers to the "rules, conditions and processes" which determine how entitlements are derived from endowments (Gasper, 1993:683). E-mapping depends on the legal, political, economic and social characteristics of a society, that is, the institutional environment. If endowments are seen as "assets", their real value is determined by the return generated. E-mapping establishes the rate at which the resources of the endowment set can be transformed into entitlements (Osmani, 1995). Endowments can be thought of as the rights and resources social actors have in principal, entitlements in contrast are what social actors get in practice (IDS, 2003).

A change in the entitlement set can only be brought about via an increase in endowment or by a favourable shift in the e-mapping factors. In practical terms this translates into an indeterminate number of variables. One way of systemising the analysis is to categorise entitlements on the basis of their source.

Entitlements originate from four basic sources or channels (Gasper, 1993). These include:

- **Direct entitlements**: Entitlements that are produced within the household. For example food which is home grown.
- **Trade related entitlements**: Entitlements which originate through the market exchange of commodities, for example selling of labour.
- **State transfer entitlement**: Net entitlements originating from the state, that is, public goods such as social security minus tax obligations.
- **Interhousehold transfer entitlements**: Entitlements which originate from explicit or implicit reciprocal, non-moneterised, contracts between households.

Given the wide spectrum of factors influencing entitlements there is a temptation to short cut the analytical process and use real income as a proxy for entitlements. Entitlement is broader than income or purchasing power, it is "acquisition potential as a whole". As potential, it is the "most that people might become entitled to, a set of opportunities that deviates from what people actually secure" (Gasper, 1993:705).

The discrepancy between income and entitlement arises *first,* because people may squander opportunities available to them. As in the case of capabilities the concern is with peoples' real opportunities. *Secondly*, individuals may fail to claim entitlements they qualify for, for example social security entitlements. A *third* reason for the income/entitlement discrepancy is that individuals may obtain or forfeit commodities via antisocial and unlawful action such as theft. A *final* reason is that people may receive discretionary support from others in the form of charity[24], or they may give away their goods.

Entitlement should also not be confused with effective demand. Gasper (1993) points out that entitlement is the other side of effective demand: effective command. Command indicates that supply considerations have been taken on board alongside those of demand. Arguably, in a market economy supply conditions are reflected in prices. However, in the case of non-marketed goods such as education or health the supply of goods and services are important. If there is no hospital or school in the area the ability to acquire education or medical care does not depend on having the income to pay for such services (effective demand), but on supply. In essence, entitlements reflect the real opportunities available to acquire goods and services.

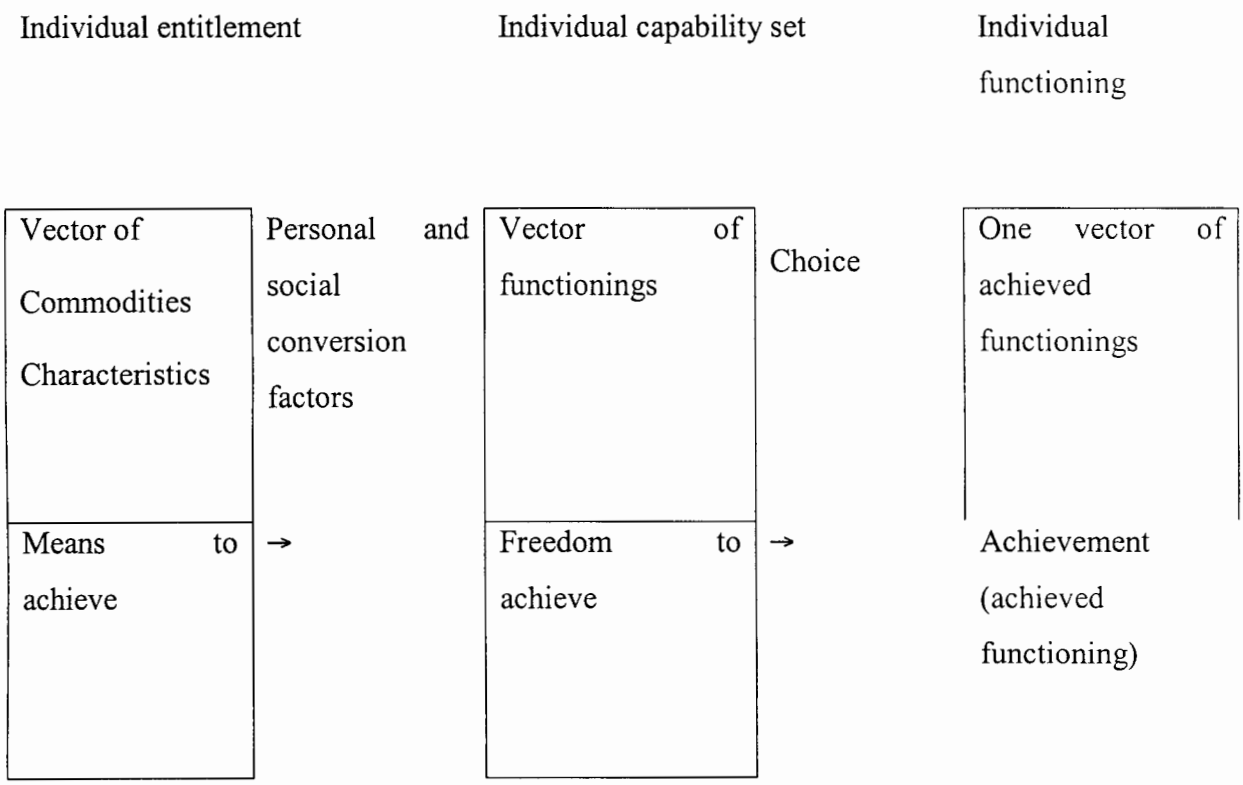
3.3.5.2 Entitlements and capabilities

Entitlements are central to the debate on wellbeing and development because they generate capabilities (Sen, 1984). Entitlements are the link between people and the commodities they

[24] Charity differs from reciprocity. In the case of the charity no counter performance is expected while in the case of reciprocity an implicit counter claim exists.

need to realise certain important capabilities (Gore, 1993). Not all capabilities are generated by commodities, however many basic capabilities such as being well-nourished depend on peoples' command of goods and services (Sen, 1984a:523). Sen (1986:48) goes as far as to suggest that while capabilities and wellbeing remain key development variables, an expansion of entitlements is "a useful- though derivative - characterisation of development". Figure 3.1. below schematically illustrates the link between entitlements, capabilities and functionings.

Figure 3.1: A schematic representation of the capability approach



Source: Robeyns (2000)

Mathematically the above schematic can be represented as follows:

$b_i=u_i(c(x_i))$ (Equation 3.1, Lelli 2001)

Let b_i represent persons i's functioning, with x_i being the vector of the commodities possessed by person i (their individual entitlement). Note that x_i has been selected from the possible consumption set X_i. Let c be the function converting the commodity vector into the

vulnerable and "generates resources and responsibilities, not expectations and demands" (Gasper 1993:695).

Dréze and Sen (1989) identify two broad macro-economic entitlement-securing strategies. The first they label a "growth-mediated security strategy". This strategy strives to first promote economic growth and then to harness the "potentialities" it generates namely; increased personal incomes and a larger public support base. The second strategy is more direct. It focuses on directly securing entitlements through public support actions such as job creation initiatives, the redistribution of income and other publicly supplied goods such as health, education and social security. Dréze and Sen (1989) label this a "support-led security strategy".

Neither of these policy approaches is unproblematic. In the case of the growth strategy, there is a real danger that growth of personal incomes will be unequal, and that those whose entitlements are the most precarious will gain the least from economic growth. Moreover, the scope to secure funds for social expenditure items may not necessarily exist. Social expenditure requires a political commitment to place human need above material greed.

In the case of a support-led strategy the question of affordability is raised, especially for poor nations. There also exists the danger that a state, with a large expenditure bill could "crowd out" private investment, negatively affecting an economy's long-term growth prospects. Dréze and Sen (1989) suggest that to reduce the difference between the two strategies to one of State versus Market is naïve and simplistic. The question is the "relative importance of private income and public services in attaining some very basic human capabilities". The distinction between the two strategies matters to the extent that they offer two different development policy menus, not different ideologies (Anand and Ravailion, 1992). If development is to be served, it is more likely that a balance between the two strategies will be achieved.

3.3.6 Accommodating Social Exclusion concepts within Sen's Capability Approach

The criticisms levelled against the orthodox development approach by the adherents of social exclusions theories centred on the extent to which the approach failed to include and address

issues such as people's participation, culture, gender and environmental concerns. It is thus necessary to analyse the extent to which Sen's capability approach can account for the "excluded".

With respect to **participation** and the Capability Ethic, it has been emphasised throughout the analysis that within the context of genuine development, people's participation (the formation of democratic, independent and self-reliant communities) is the agent of constructive change. The expansion of an individual's capabilities cannot occur unless he or she is actively involved in the development process. The absence of genuine participation within the Capability Ethic is indicative of a low level of development, which is why repressive social and political regimes represent a development shortfall.

Proving that the Capability Ethic is **culturally sensitive** is more complex than proving that participation is inherent to the concept of human development. The Capability Ethic embodies explicit values and is thus a universalist theory[26] of social change and not ethically-relativist. The question is whether this approach is therefore culture-insensitive. In order to qualify as culture-insensitive it must be proved, firstly, that universalism disregards cultural differences and, secondly, that it neglects autonomy (Nussbaum, 1995a). On both accounts, the capability approach acquits itself.

First, with reference to ignoring cultural-differences the Capability Ethic allows for a high degree of plural and local specification. Plural specification is concerned with identifying important capabilities, while local specification centres on the form in which the valuable capabilities have to be realised. In both cases the approach allows for local cultures to dictate. Second, the capability approach acquits itself of the "neglect of autonomy charge". Autonomy is one of the core values of Sen's approach, which is exemplified by its concern

[26] The early 1990's saw a degree of tension within the general human development camp about the issue of relativism vs. universalism. This tension was one of the central themes explored in the book "Woman, Culture and Development: A Study of Human Capabilities" edited by Martha Nussbaum and Jonathan Glover. The book traces the debate and to a certain extent offers itself as a counterweight to a book also originating from the research programme of the World Institute for Development Economics Research (WIDER) titled "Dominating Knowledge" Development, Culture and Resistance edited by Marglin and Marglin. The first publication converges around a universalistic approach while the latter takes on a relativist ethical position.

with freedom and choice. Nussbaum (1995a:95) points out that the functionings that are identified as important are not "pure spontaneity" but are in part derived from the cultural context.

The capability approach is particularly suited to **gender analysis** and specifically the evaluation of gender inequality. Firstly it records deprivations that women themselves tend to ignore (Wolf, 1995). Second, the capability approach explicitly recognises diversity and therefore guards against the introduction of any male biasness. Furthermore its emphasis on both the individual and the household permits intra-household inequalities to surface while simultaneously addressing how dependencies and relationships can impact on wellbeing (Robeyns, 2001). Finally the capability approach also supports local and context specific analysis. These types of studies are vital since they prevent women from developing countries being lumped together as the "vulnerable other", being analysed as a category and not as human beings (Parpet, 1995:264).

Regarding **sustainability**, Griffin and McKinelly (1994:96) point out that if development can be defined as the expansion of capabilities (freedom), sustainable development can be defined as the "permanent enlargement of human capabilities". Development cannot be said to have occurred if the capability enlargement is not permanent.

Finally, within the human development literature the term "social opportunity", the antithesis of "social exclusion", is increasingly being used. Dréze and Sen (2002:6) elaborate on this new concept in relation to the capability approach as follows:

> The capability approach ..[is] essentially a 'people centred' approach which puts human agency (rather than organisations such as markets and governments) at the centre of the stage. The crucial role of social opportunities is to expand the realm of human agency and freedom, both as an end in itself and as a means to further expansion of freedom. The word 'social' in the expression 'social opportunity'...is a reminder not to view individuals and their opportunities in isolated terms. The options that a person has depend greatly on relations with others and on what the state and other institutions do. We [should] be particularly concerned with these opportunities that are strongly influenced by social circumstance and public policy.."

3.4 CLOSURE

The objective of this chapter was to demonstrate that the human development approach is a feasible alternative to the orthodox neo-classical development model. As a theoretical construct, human development is grounded in the capability approach and supported by the "perspectives of the excluded", which give it a richer, more analytical content. If human development is defined as an increase in the range of choices and ability to choose, the "perspectives of the excluded" provide insight into what types of choices and for which groups the expansion of choice is crucial.

Human development is about people, the lives they lead, not the objects they possess. It is achieved when an increase in freedom (choice) is brought about via the expansion of valuable capabilities. Human development still values the objectives of economic growth, education, employment, redistribution and basic needs. While previously these objectives were thought of as development ends, they are now considered the means of development, the means by which capabilities can be expanded.

CHAPTER FOUR

OPERATIONALISING THE HUMAN DEVELOPMENT APPROACH: MEASURING DEVELOPMENT AND POVERTY IN THE SPACE OF CAPABILITIES AND FUNCTIONINGS

> Given the rich array of functionings that Sen takes to be relevant, given the disagreement among reasonable people about the nature of the good life, and given the unresolved problem of how to value sets, it is natural to ask how far Sen's framework is operational. Is it a realistic alternative to the methods on which economists typically rely - measurement of real income, and the kind of practical cost-benefits analysis which is grounded in Marshallian consumer theory? (Sudgen, 1993 in Robeyns, 2000:21).

4.1. INTRODUCTION

Much of the analysis presented in the previous two chapters was aimed at clarifying the conceptual nature of human development. The objective of this chapter is to determine the extent to which this theoretical framework can be practically operationalized; *whether it is empirically possible to measure wellbeing, poverty and development in terms of capabilities and functionings?*

In Chapter Two it was noted how the neo-classical development paradigm (1945-1990) used a money-metric such as GDP per capita and income as a measurement yardstick and explained how this was consistent with its theoretical structure. Chapter Three, in contrast, fleshed out the human development approach and explained why income cannot, nor should not be used to measure wellbeing, that development and poverty need to be measured in terms of functionings and capabilities.

As illustrated by the quote at the start of this Chapter, while the mainstream development fraternity appears to have embraced the normative and theoretical components of the human development approach, at the valuation level there is still a tendency to measure development and poverty in terms of private current incomes (or private consumption expenditures). Furthermore, while social indicators are increasingly being presented alongside these

economic variables, their un-structured, non-integrated and variable presentation suggests these are considered as ancillary and not alternatives to income based measures."[A]t the end of the day appraisals and decision making are based on GDP behaviour and poverty is measured in money metric terms (Boltvinik, 1999:5).

The persistence of this ideological-methodological incongruence can be attributed to two main factors. The *first* has to do with the ready availability of income data and of statistical techniques to calculate poverty lines, minimum living levels and poverty head count ratios. Moreover, income measures are intuitive, well understood by both policy makers and the general population. The *second* reason hinges around the fact that capabilities and functionings are somewhat elusive; yardsticks to measure them do not readily exist. Furthermore, there is no real consensus about which functionings to include when assessing well-being. The high information requirement to produce these functioning indicators is also viewed as problematic, especially in the case of developing countries where socio-economic data are generally limited (Robeyns, 2000; Chiappero Martinetti, 2000).

The validity of these comments will be explored in the analysis that follows. This chapter begins by delineating the main issues that have to be dealt with when applying the human development approach. This will be followed by a short review of how existing empirical studies have addressed these methodological issues. The Chapter will be concluded with a detailed description of fuzzy sets theory, as this methodology will be applied to data on Western Cape farm workers in Chapter Six of this dissertation.

4.2 EMPIRICAL APPLICATIONS OF THE HUMAN DEVELOPMENT APPROACH

4.2.1 Methodological Comments

As a point of departure, Chiappero Martinetti (2000:5) outlines the main methodological issues that need to be dealt with when operationalising the capability approach. These include the following:

Selection of the adequate evaluative space - capabilities versus achieved functionings: In the previous chapter it was pointed out that wellbeing needs to be measured in terms of capabilities rather that achieved functionings. The wellbeing of a person not only depends on the functioning vector he or she actually achieves but also on the degree of freedom they have to pursue their own wellbeing goals. This is consistent with the fact "that the good life is *inter alia* also a life of freedom" (Sen, 1985:202). This procedure is not straightforward, given that one encounters a number of conceptual and practical problems when trying to measure capabilities. The *first* has to do with the fact that when measuring capabilities not only does a person's actual functioning achievement need to be enumerated, but also the possible alternatives they face. Furthermore once the alternatives (possibilities) have been identified, these need to be valued to reflect their relative "goodness". That is to say the distance between the alternatives needs to be measured, with relatively closer alternatives achieving a lower scoring than more distant alternatives[27].

The *second* problem encountered when measuring capabilities concerns the fact that most statistical surveys measure what occurred, not what could have happened. "Asking most people to imagine what if – what might have happened in their lives if things had been otherwise, or what they might do if, confronts them with a special task that is likely to be difficult"(Converse and Presser, 1986 in Brandolini and D'Alessio, 1998:13). Brandolini and D'Alessio (1998:13) go further to remind us "If you ask a hypothetical question you get a hypothetical answer". Given these difficulties[28], it has been suggested that empirical applications of the capability approach should confine themselves to the space of achieved functionings provided that it is recognised that this represents but an **elementary** evaluation of the capability set (Chiaperro Martinetti, 2000; Brandolini and D'Alessio,1998)

---

[27] Brandolini and D'Alessio (1998) illustrate this by providing the following example: a person's wellbeing can be considered higher when the alternative to working as a central-bank economist is represented by a career as an artist rather than an academic economist. Irony aside, what the example is trying to demonstrate is that the distance between "central bank economist and artist" is much larger than between "central bank economist and academic economist".

[28] A third problem with respect to capability measurement that has not been explored here has to do with the time dimension of the capability set. Alternatives faced by a person at any give time, to some degree, reflect choices made in the past.

A list of (essential, relevant) capabilities or functionings: Before being able to carry out an evaluation of wellbeing some agreement must be reached on which functionings or capabilities to take into account. As noted in Chapter Three, Sen does not specify a list nor provide clear guidelines as to which capabilities to include. It has been argued that this is a deliberate omission on his part and represents his attempt to ensure the capability approach remains sensitive to cultural differences (Lelli, 2001). What Sen (1989) does state is that the process of capability selection needs to be driven by the norms or values present in a society as well as the research question being asked[29].

When the investigation revolves around the extreme poverty observed in a number of developing countries, it is relatively easy to reach consensus as to which basic functionings to include. To escape avoidable morbidity and premature mortality and to be nourished, sheltered and have received a basic education, are functionings that would no doubt form part of such an investigation (Sen, 1992). In more developed contexts, it is harder to identify any type of list given that a wellbeing assessment should reflect the full range of "beings and doings" that constitute human life.

To guard against the introduction of possible biases in the selection of appropriate capabilities/functionings, Robeyns (2003) proposes that an ordered selection procedure be followed. *Firstly*, the functioning list should be explicitly formulated, discussed and defended. *Secondly*, the methodological justification for the list has to be clarified. *Thirdly*, the list should be drawn up in two stages, with the first stage representing the ideal and the second the pragmatic compromise which takes into account measurement design and data limitations. *Finally,* the functionings selected should include all elements that are important, for example both quantity and quality dimensions.

---

[29] Saith (2001) identifies other work that has been linked to the capability approach although not embraced by Sen, where an explicitly formulated list of basic values and/or well-being functioning requirements can be found. These include Nussbaum's "basic human functional capabilities", the Basic Needs Approach developed by Streeten *et al*, Doyle and Gough's Theory of Human Need, Alkire's criteria for basic capabilities, Qizilbash's prudential values for development and Desai's list of capabilities. The reader is referred to Saith (2001: 13-19) for an account of these various approaches.

Selecting a set of indicators related to these dimensions and identifying adequate criteria to measure and reflect these. Once the relevant functionings have been selected, the next step involves deciding on which indictor best captures the functioning or capability being measured. In most cases this task will be governed by data availability. A more challenging problem confronting the researcher is deciding how to measure the possession of an attribute. For example what level of education constitutes the functioning of being educated? The two most common approaches include standard binary classifications and fuzzy sets theory.

With respect to binary classification, a person or a household can be considered poor if their achievement of a certain functioning falls below a predetermined level or societal norm, and non-poor if they fall above this level. Binary classifications are thus of the type either/or – *either* poor *or* non-poor. Brandolini and D'Alessio (1998) note that an important objection to this approach is that the distinction between poor - a bad state, and non-poor – a good state can be hazy, occurring in grades. One way of taking this graduation process into account is to use the tools provided by fuzzy set theory. Here it is possible to define two extreme cut-offs or values that indicate the points at which a person is definitely poor and non-poor. Between these two extreme values, however, a person may be classified as being "partially" deprived of a particular functioning, i.e they form part of a group that can be classified as being poor *to some degree* with their "degree of membership" being specified on the basis of one or other membership function. This function can take a variety of forms depending on the application context and the nature of the indicator being assessed. Section 4.3 deals with these issues in more detail

Aggregation Issues: a) How and if, to aggregate indicators to obtain an overall evaluation for each functioning b) how and if to aggregate the functionings to achieve an overall wellbeing evaluation: With respect to aggregation, the *first* issue revolves around how one moves from individual indicators to the space of functionings and *secondly* how to aggregate the different functionings to obtain an overall picture of wellbeing. A number of aggregation weighing structures /techniques have been suggested in the literature. These are discussed below:

Equal Weighing: Here all indicators or functionings are treated equally and thus assigned an equal weight. The advantage of this strategy is its neutrality - the researcher is not called upon to value any of the constitutive elements. However, the disadvantage of this approach is that it does not discriminate between attributes that play different roles furthermore, equal weighting can lead to double-counting should the informational content of any two attributes (indicators/functionings) overlap.

Frequency based weighing: Frequency based weighting systems "let the data speak for themselves", with weights being calculated by examining the relative frequency of an attribute. For example the lower the proportion of people in a society deprived of a certain indicator or functioning, the higher the weight assigned to that attribute. Specifications of this approach include Desai and Shah (1988) who assigned weights based on the complement to one of the proportion of deprived people. Cerioli and Zani (1990), in contrast, specified weights based on the inverse logarithm of the proportion of people deprived of an indicator/ functioning[30] (Chiappero Martinetti, 2000).

Multivariate Techniques: The output results of multivariate statistical techniques such as factor analysis, principle components and cluster analysis is another weighing strategy that can be adopted. Briefly, factor analysis is a data reduction technique that summarises all available data in such a way as to detect underlying relationships between the different variables. Factor analysis is based on the assumption that the observed variables are linear combinations, of some shared underlying characteristics known as "factors". In summarising the original data, factor analysis determines the minimum number of hypothetical dimensions (characteristics) that can be observed from correlations between the variables. The factor loadings may be considered regression weights with higher loadings making the indicator more representative of the functioning (Lelli, 2001).

---

[30]According to Brandolini and D'Alessio (1998) the mathematical specifications for these are as follows:
Desai and Shah (1988): $w_j = 1 - \theta_j$ where θ_j : proportion of deprived/poor
Cerioli and Zani (1990): $w_j = -\ln \theta_j$ where θ_j : proportion of deprived/poor

While the foregone analysis illustrates the various aggregation strategies that can be followed, it must be stressed that aggregation at either the indicator or functioning level may not always be necessary nor appropriate. The main advantage of aggregation is that it provides an immediate, composite picture of a complex phenomenon presented in a comprehensible way. The main disadvantage of aggregation is that valuable pieces of information are lost in the process. "The passion for aggregation makes good sense in many contexts, but it can be futile or pointless in others. When we hear of variety, we need not invariably reach for our aggregators."' (Sen in Brandolini and D'Alessio, 1998:19).

As can be gleaned from the forgone discussion, operationalising the human development approach is neither simple nor straightforward. However, judging from the range of empirical applications that have applied this methodology, the task is not impossible. The way in which these applications have dealt with these different issues is the subject of the review that follows.

4.2.2 Empirical Applications of the Human Development Approach: A Review

In an attempt to illustrate the basic concepts underlying his theory, Sen proffered the first two applications of the human development approach. The first of these studies looked at data from 1980-1982 and showed that while the GNP per capita of both Brazil and Mexico was roughly seven times greater than that of India, China and Sri Lanka, the latter group's performance in terms of average life expectancy, infant mortality rates and child death rates was significantly higher. Furthermore, in terms of basic education achievements, Sen found that China and Sri Lanka had fared much better in comparison to India, a country with relatively high tertiary education rates. Sen (1985) went on to state that the priority given to social goods provisioning in China and Sri Lanka was largely responsible for these discrepancies. This study not only illustrated the extent to which GNP per capita rankings differ significantly from a functionings, ranking but also how growth in per capita GNP does not necessarily translate itself into growth in living standards (Robeyns, 2000).

Sen's second application of the capability approach looked at gender bias in India (Sen, 1985). By comparing data on health and nutrition functionings for a number of Indian States, he showed how women had much lower functioning achievements with respect to age-specific mortality rates, morbidity and malnutrition than their male counterparts.

Following these two applications, a number of other researchers and institutions have used the human development approach to shed light on a range of analytical questions using varying levels of methodological sophistication. These studies can broadly be divided into two main groups, those using macro or aggregate data sets and those that have used micro data-sets directly related to households and individuals. Only works that have acknowledged the human development or capability approach as their theoretical departure point[31] have been included. Furthermore, it is not intended that this be a complete listing of all empirical work; rather it is a snapshot of the breadth and depth of the theory's application.

4.2.2.1 Macro-applications of the Human Development Approach

a) Composite indices developed by the United Nations Development Programme (UNDP)

Human Development Index: The Human Development Index (HDI) developed by the UNDP is the most well-known aggregate application of the human development approach. Well-being indicators to supplement and broaden GNP per capita first began appearing in the late 1970s. According to Jahan (2002) the most important of these was the Physical Quality of Life Index (PQLI) developed by Morris under the direction of the US Overseas Development Council. This index combined statistics on infant mortality, literacy and life expectancy in a single comparative index. The United Nations Development Programme (UNDP) used the PQLI as a departure point when formulating the Human Development Index (HDI), which first appeared in the 1990 Human Development Report. The HDI incorporates three important dimensions of human development: longevity, knowledge and living standards. By assimilating data on average life expectancy, literacy and income, these three dimensions are converted into a single numeric; i.e. an internationally and interregionally comparable index.

---

[31] The reader is referred to Boltvinik (1999) for a detailed review of current poverty and development measurement methodologies.

The resulting HDI index ranges from 0 to 1, with higher values indicating a higher development status.

Since its introduction, the HDI has attracted significant attention from academics, researchers, policy makers and development activists. While the response to the index has largely been positive, it has also been the subject of several critiques that have sought to challenge the internal consistency of the index, its robustness and predictive power. In response to these criticisms, the HDI has undergone several methodological revisions[32] and, while the index remains far from perfect, it has had a profound impact on the practise and theory of development (UNDP, 2002; Jahan, 2002).

Jahan (2002) outlines the five distinct achievements of the HDI. *Firstly,* over the past decade, the HDI has continuously demonstrated the inadequacy of income measures and has shown how a high level of GDP per capita does not necessarily translate itself into a high HDI. *Second*, the HDI has sparked a healthy competition among countries wishing to surpass their neighbours or competitors in the development stakes, and in the process forced the laggards to review the "humanness" of their policy agendas and strategies. *Thirdly*, the HDI has served as an important tool for public communication and advocacy, and has thus contributed to policy debates and dialogues. For example when the regionally disaggregated HDI for Brazil showed large disparities, civil society institutions collectively drew attention to this, and agitated for government intervention to redress this inequality. The *fourth* achievement of the HDI has been improved monitoring and evaluation of the various HDI indictors together with more systemised and reliable data collection procedures. *Finally* the HDI has become the focus of some academic interest and this has not only sparked interest in the index itself, but also the broader conceptual framework underpinning the approach.

---

[32] These refinements were as follows: 1) In 1990, the HDI was calculated from a deprivation perspective in that average deprivations were identified for each variable and then the HDI was calculated as 1 minus the composite average deprivation however since 1991, the HDI has been directly calculated 2) The educational attainment variable was added in 1991 as the second component of knowledge to include people not covered by the adult literacy variable 3) The introduction of fixed minima and maxima was only introduced in 1995, prior to that observed maxima and minima were used and this created a number of problems with respect to benchmarking and trend analysis. 4) In 1990, the income variable was logged however from 1991-1998 this was changed. Income above average global income was drastically adjusted using an extremely regressive formulation. This formulation was found to unduly punish middle-income countries and in 1999, the income component once more appeared as a logged variable (Jahan, 2002 ; UNDP, 2002)

While this list of achievements is impressive, it is equally important to realise the limitations of the HDI. For example it only focuses on three functionings, it omits items such as participation, sustainability and human rights. Furthermore, the HDI measures averages for a society or a community; distributional issues are largely ignored. To conclude on the overall value of the index, Robeyns (2000:23) states "Although using just a few functionings and perhaps in a somewhat crude way, it is probably the application that has had the largest impact on policy making. Perhaps this is one of the best illustrations of the *usefulness* of the capability approach."

Gender–related Development Index (GDI): The GDI was developed by the UNDP in 1995 in order to highlight the issue of gender inequality. The GDI measures the same variables as the HDI, but also takes into account gender biases. The GDI is simply the HDI adjusted downwards for gender inequality. Calculating the GDI involves three steps. *First*, female and male indices for each of the functionings are calculated according to the set formula. *Second* an equally distributed index is calculated in such a way as to penalise differences in achievements between the genders. *Finally*, the GDI is calculated by averaging these three equally distributed indices (Jahan, 2002).

The value of this index lies in the fact that it highlights gender inequality, and as such has been used extensively as an advocacy tool by women's groups and other civil society bodies. From the perspective of policy makers, this index has proved useful in the formulation of policies and programmes that attempt to redress gender biases. Moreover, it has drawn attention to the fact that gender equality does not depend on a country's level of income nor their stage of development

Human Poverty Index: In response to the need to view development from the perspective of deprivation, in 1997 the UNDP developed the Human Poverty Index. Two versions of the HPI have been conceived, one for developing countries (HPI-1) and one for developed countries (HPI-2). It has been argued that 1 minus the HDI is a measure of a country's level of poverty. However Jahan (2002) claims that this is not correct. While this does measure the

average shortfall in achievement, it does not assess how the benefits of human development are distributed across a society.

HPI-1 measures similar functionings as the HDI but uses different indicators to reflect these dimensions. In addition the HPI-1 is easier to calculate than the HDI since all the indicators are already expressed as normalised percentages. In the case of HPI-2, the additional functioning of social inclusion has been added and the indictors used are suitable for measuring poverty in more developed contexts.

In reviewing the purpose served by this index, it has been noted that the HDP provides a single composite measure of poverty; furthermore, when this index is compared to the HDI, it provides some indication of the extent of inequality within a particular society. A high HDI does not necessarily imply a low HPI and *vica versa*. Furthermore the index highlights that poverty is not only a developing or emerging country phenomenon.

b) Other Macro Applications of the Human Development Approach

Ellman (1994) examined mortality and morbidity data related to two periods in recent Soviet history, namely late perestroika (1987-1991) and the subsequent disintegration of the USSR - "katastroika"(1992-1993). He noted, that while it is well documented that in the wake of disintegration the Soviet successor states experienced a range of economic, political and social upheavals that all adversely effected macro economic performance (output and inflation), what is not well known is the negative impact these upheavals had on the health status of the former USSR population. Ellman (1994) showed how there had been an increase in the crude death rate leading to a lower life expectancy at birth for the population as a whole. Furthermore, the incidence of infectious diseases such as tuberculosis was also seen to increase. He concluded that his findings were significant from a political economy perspective in that they prove the usefulness of adopting a broader capability measure when assessing changes in welfare.

4.2.2.2 Micro data applications

With respect to the micro–data applications, these have ranged from simple descriptive analysis of data in terms of functionings, to the use of aggregative methods as well as multivariate analysis and "fuzzy sets theory" applications.

a) Descriptive Functioning Analysis

In 1999, Phipps (1999) used the capability approach to compare the wellbeing of Canadian children aged 0-11 with that of Norway and the United States. Phipps found that while the mean gross family income for these three countries was roughly similar, when looking at a number of key functionings related to children's health and behaviour, real differences are evident. Firstly, the wellbeing of Norwegian children on average was found to be higher than the wellbeing of children from Canada and the US. Second, looking at children coming from households in the bottom quintile of the income distribution, in all three countries these income-poor children were found to be worse-off in terms of their functioning achievements. However, in the case of the US, the deterioration in the wellbeing of these income-poor children was found to be greater. Phipps (1999), concludes that her results are consistent with the idea that it is deprivation rather than average incomes which matter most for children's well-being.

This study highlights the usefulness of outcomes based approaches when looking at the wellbeing of children. She notes that most economic models[33] that examine children's wellbeing are primarily concerned with the eventual wellbeing of children, i.e. when they become adults. These studies examine questions such as: What is the role of parent's income or education on a child's eventual income/education level? "These issues are obviously extremely important, but children are people now, too. They are not simply "human becomings"' and their current wellbeing should count in any assessment of social welfare."(Phipps, 1999:3).

[33] Phipps (1999) refers to the work of Becker (1991) and Becker and Tomes (1979;1986).

Ruggeri Laderchi (1999) carried out a descriptive analysis on a number of dimensions of Peruvian deprivation using a 1994 household survey. The functionings[34] she examined included nutritional status (stunting), morbidity and education. The objective of her study was not only to describe Peruvian poverty in terms of functionings, but also to econometrically test the extent to which using a capability measure of poverty as opposed to a monetary measure leads to a different identification of the poor. She thus assessed the extent to which the two approaches overlap as well as the role monetary resources play in the space of functioning achievement.

Her results showed that monetary resources are indeed an imperfect indicator of functioning achievement, "parametric variations ... exist and act as a very significant wedge between means and achievements. Direct indicators rather than monetary ones should be adopted for poverty assessments"(Ruggeri Laderchi, 1999:45).

b) Comprehensive Functioning Analysis

Brandolini and D'Alessio (1998) applied the Bank of Italy's 1995 household survey to assess the wellbeing of the Italian population. This study covered six functionings (health, education, employment, housing, social relationships and economic resources) and the results were disaggregated for gender, geographic area, town size, education, industry, work status, family income and household size.

In aggregate, the study found that deprivation most often occurred in the economic resource, housing and health functionings. Examining the relative achievements of the various disaggregated groups provided a more nuanced picture. While no noticeable gender bias could be detected, a large regional divide was observed with deprivation rates being higher in the South and in the Islands. In terms of personal characteristics, higher rates of deprivation were found among the elderly, those living alone or in large households (>5). Finally in terms

[34] Ruggeri Laderchi (1999) refers to these functionings as capabilities. Here the term functioning will be used for the sake of clarity and consistency.

of income, the relative percentage of functioning poor was observed to decline as unadjusted family income increased.

In the final part of their study, Brandolini and D'Alessio (1998) analysed the Italian regional divide in greater depth. They experimented with two techniques, namely sequential dominance analysis and multidimensional poverty indices to arrive at a more complete ordering between regions. In the case of the sequential dominance analysis carried out on the non-binary variables, the North could not unambiguously be ranked above the South. When multidimensional poverty indices were constructed these all confirmed that poverty was higher in the South and Islands than in the North.

From the perspective of this dissertation, one of the more notable applications of the capability approach is the work of Klasen (2000), who used the 1993 SALDRU household survey to measure the extent of poverty and deprivation in South Africa. Klasen (2000) identified 14 functioning indicators which, through the application of principal components analysis, he reduced to a single household deprivation index. This index, along with its various components, was then compared to a standard expenditure-based poverty indicator to measure their degree of correlation and gauge their accuracy in identifying the most vulnerable South African households.

While Klasen (2000) found the deprivation index to be most closely correlated with the expenditure indicator, i.e. expenditure was the best proxy for deprivation, when the data were disaggregated by level of deprivation, this finding did not hold. For relatively more deprived households, the fuel and sanitation indicators were found to be better predictors. In addition Klasen (2000) noted how the exceptionally strong correlation observed between expenditure poverty and deprivation may be uniquely South African, explained in terms of the apartheid legacy. Apartheid policies not only strengthened the incomes of white South Africans but also ensured their preferential access to public goods and services. He predicted this correlation would weaken with time, as equal access to public goods was ensured.

With respect to poverty identification, when Klasen (2000) compared the results of the two measures, he found marked differences in the extent to which the various South African

groupings were affected by expenditure poverty as opposed to deprivation (and *visa versa*). For example, the results of the deprivation measure indicated wellbeing to be much lower in the rural areas and among Africans than the corresponding expenditure measure would suggest. Similarly, Coloured and Indian households were found to be less deprived than could be assumed from their expenditure scores. From a policy targeting perspective, the implication of this discrepancy is not only a very different geographic spread of interventions but also some disagreement as to who should be the beneficiaries of such interventions.

Klasen (2000) concluded his analysis in support of adopting a capability measure of wellbeing and stated:

> Apart from the empirical differences between the two measures, one should bear in mind the conceptual difference between the two. While the expenditure poverty measure relies exclusively on one important input to well-being which is more or less well correlated with many facets of basic capabilities, the deprivation index examines capability outcomes directly. Policies that aim to reduce the multifaceted dimension of deprivation can therefore be much more adequately monitored, analysed and disaggregated using an outcome based measured such as the deprivation index proposed here. Moreover to the extent that description always implies an inevitable element of prescription, the derivation index may shift the anti-poverty efforts of government towards policies intended not only to raise incomes but to reduce the many other deprivations suffered by the worst-off in society, particularly things that are often not addressed through income alone.

The last group of studies reviewed here, all applied the theory of fuzzy sets. These studies are of particular interest here given this approach will followed in Chapter Six when assessing the development status of Western Cape farm workers. A comprehensive overview of this theory is provided in the Section that follows.

Chiapperro Martinetti (2000) was the first to apply the theory of fuzzy sets in the human development context. Her rationale in adopting this methodology was to propose "an empirical implementation of Sen's capability approach that was able to preserve its interpretative richness and attempt some methodological problems that couldn't find an operative solution in more standard approaches to poverty and well-being analysis"(Chiappero Martinetti, 2000:22)

With the single individual as her reference unit, Chiappero Martinetti used data from a 1994 Italian household survey to examine 15 variables related to five functionings. The membership functions (grades) for each of these variables she defined either on the basis of their distribution frequencies or by a linear function, in the case of variables with equidistant modalities. Depending on the nature of the variable, Chiappero Martinetti (2000) then aggregated these indicators into their corresponding functionings through applying either union or weighted averaging operators. Lastly, these five functionings were collapsed into a single well-being indicator which was then disaggregated for gender, age, geographical area, martial status, work status and occupational group.

On the basis of her analysis, Chiappero Martinetti (2000) concluded that the Italian population enjoys a relatively high degree of wellbeing, particularly when looking at the more material aspects of wellbeing such as housing and health. In terms of functioning achievement, she found no significant differences between North and South, male and female, young and old and within occupation groups. However, when ranking the various subgroups of the populations on the basis of a composite index, she found that women, the elderly (particularly those living alone), people living in the South of Italy, housewives and blue collar workers achieved lower levels of well-being. While recognising that the computation of a composite index had value, Chiaperro Martinetti (2000) reiterated the importance of presenting the analysis at different aggregation levels. She concluded her analysis by noting how applying data at the individual as opposed to the household level allows one to draw attention to deprivations that would otherwise be hidden (i.e. the position of housewives and the unemployed)

Using the Chiappero Martinetti (2000) study as a reference guide, Lelli (2001) tested the extent to which the results obtained from following a fuzzy sets methodology differed from those obtained using factor analysis (multivariate techniques). Lelli (2001) claims her study was motivated by a degree of sceptism concerning the validity of the fussy sets approach.

Lelli (2001) applied the 1998 Panel Study of Belgian Households to look at more than 50 different indicators related to 7 functionings and presented her results disaggregated for gender, age, region, marital status, education, employment and household size. With respect to comparisons between the two methodologies, Lelli (2001) found that both produced the same overall pattern of results. Both methodologies were consistent with other studies and showed a relatively high accomplishment in the material dimensions of wellbeing (shelter, economic and working conditions), with relatively poor achievements in the field of social interactions and cultural activities. Furthermore, both approaches drew attention to the higher deprivation rates certain subgroups such as the unemployed, housewives, retirees and those divorced, all experience.

While Lelli (2001) offered no formal explanation as to why both methodologies produced such similar results, she did intimate that the answer could be found in the relationship between the various fuzzy aggregative operators and the factor scores' least squares estimation procedure. She concluded by noting how a more in-depth analysis of this relationship should be the priority of future research.

The final study that will be reviewed here is the work of Qizilbash (2001) who used data from the 1996 South African Census to examine six deprivation indicators, namely; level of education, access to water, refuse removal, energy source for cooking, number of rooms per household and employment, all disaggregated by province. The objective of this study was to assess the extent to which inter-provincial rankings differed when i) a functionings poverty measure was used rather than an expenditure metric and ii) when a fuzzy set classification criterion was used rather than a binary "definite" poverty measure. Qizilbash (2001) justified his research question based on the fact that in South Africa, local authorities are allocated money from the central government to supply basic services to the poor through the application of a formula that takes into account the number of poor households living in an area. Here a poor household is defined as those earning less than R 800 per month. Provinces having a large number of low-income households are therefore entitled to a larger share of the budget. The focus of Qizilbash's (2001) study was to gauge whether applying a different poverty criterion would lead to a different provincial fund allocation.

To arrive at the composite picture of all the functionings examined, Qizilbash (2001) ranked each of the nine provinces, per functioning, on an ordinal scale and summed these scores (known as the Borda Method) to determine each province's overall rank. Table 4.2 below shows how applying a different poverty criterion and classification method generated significantly different rank orders.

Table 4.1.: South Africa's Nine Provinces: Ranked According to Poverty Definition

Province	Expenditure Poverty Rank	Definite Poverty Rank	Fuzzy Poverty Ranks
Eastern Cape	4	1	2
Free State	3	7	7
Gauteng	9	8	8
KwaZulu Natal	5	3	4
Mpumalanga	8	4	6
Northern Cape	2	6	5
Limpopo	5	2	1
North West	1	5	3
Western Cape	7	9	9

Source: Qizilbash (2001)

In closing, Qizilbash (2001) suggests that while composite indices and ranking procedures are insightful, inter-provincial comparisons at the functioning level are more complex than Table 4.2 suggests. He illustrated this with the case of Gauteng. Looking at Table 4.2 one could conclude that Gauteng has relatively low levels of poverty. However, this is somewhat misleading as a very large proportion of Gauteng households live in overcrowded housing conditions.

The final observation made by Qizilbash (2001) is that since 1994, the South African government has instituted a host of policies aimed at addressing the multidimensional

character of poverty. It is therefore surprising that the government has chosen to allocate funds on the basis of a formula that is inconsistent with its overall policy position.

4.2.3 Empirical Applications: A Synthesis

Based on the studies reviewed here, the following general conclusions can be drawn:

- **Relatively limited number of studies**: Robeyns (2000) notes that despite Sen's view of human development having been formalised since 1985, the number of empirical applications of this approach is still limited. In recent years (2001-2003), interest in this line of reasoning has been sparked by the annual, "Conference on the Capability Approach"[35] however few of these papers have yet been formally published.
- **Country focus**: With respect to the micro levels studies presented here, a surprisingly large number of these examined wellbeing and deprivation in developed country contexts. This supports the notion that poverty, as a social phenomenon, is not limited to developing countries. However, the power of the human development approach to better understand the multiple deprivations experienced in developing countries needs to be explored. The South African and Peru cases attest to the usefulness of this approach.
- **Research Questions**: The primary research question addressed by most of the studies presented here was to verify empirically the inadequate nature of standard monetary poverty indicators. Comparative testing of techniques, the modelling of interactions between functioning achievements, and the need to evaluate the broader capability set, are all questions requiring additional research.
- **Use of Second Best Data Sets**: The final point is the extent to which all of the studies made use of second best data sets. In many cases the indicators and functions selected, were dictated by data availability, given that the data-sets applied were all designed with some other purpose in mind.

---

[35] To date 3 conferences on this theme have been held. The first two were hosted by the Von Hügel Institute, St Edmund's College, University of Cambridge, while the most recent conference titled "Justice And Poverty: Examining Sen's Capability Approach" was held in September 2003 at the University of Padua, Italy.

To conclude, based on the evidence presented here, the concept of human development is empirically operational. This evidence "makes one wonder whether these applications are really much more difficult to make than standard poverty and inequality analysis, or why perhaps welfare economists in general are not more interested in taking up this line of research, and whether the fact that the comparative advantage of the capability approach is informational richness and not formal sophistication, has anything to do with this" (Robeyns 2000:26).

4.3 FUZZY SETS THEORY

The concept of fuzzy sets was introduced earlier in Section 4.1 and 4.2 when it was noted that this theory and its accompanying methodology is particularly useful in dealing with vague concepts - where the boundary between a "good" and a "bad" state is not precise[36]. Poverty and well-being are examples of such vague concepts. Zadeh first introduced the theory of fuzzy sets in 1965 and its use has become widespread, particularly in the physical sciences, mathematics and engineering. Within the social sciences its application has mainly been limited to psychology. However, in recent years its relevance to economics, particularly in the fields of social welfare consumer choice, inequality and poverty analysis, has been established (Brandolini and D'Alessio, 1998; Lelli, 2001).

4.3.1 Standard versus Fuzzy Sets

To begin with, it is useful to think of a set as a "container" or "holder". Let X denote a set, containing the element x, with A being a subset of X. Then with respect to sub-set A, element x can take two exclusive positions - it can either form i) part of A or ii) not part of A.

$x \in A \Leftrightarrow \mu_A(x) = 1$

where μ_A is the membership function to the sub-set A

$x \notin A \Leftrightarrow \mu_A(x) = 0$

Thus in classical set theory there is no ambiguity regarding x's inclusion or exclusion with respect to sub-set A. Fuzzy set theory, in contrast, makes provision for an element to partially belong to a set. Let X once more denote a set containing the element x. A fuzzy sub-set A of X can be defined as:

---

[36] Chiappero Martinetti (2000) draws a distinction between vagueness and ambiguity and notes that although both concepts are related to uncertainty, they have different semantic meanings. Vagueness relates to the difficulty encountered when making clear distinctions in a particular domain of interest. Ambiguity, in contrast, relates to a situation in which the choice between two well-defined alternatives is left open-ended. "Traditionally the main mathematical framework for dealing with uncertainty is probability theory, which assumes a notion of stochastic uncertainty... [F]uzzy set theory and fuzzy logic 'provide a natural way of dealing with problems in which the source of imprecision (in the sense of vagueness) is the absence of sharply defined criteria of class membership rather than the presence of random variables (Zadeh , 1965 in Chiappero Martinetti 2000)

$\{x, \mu_A(x)\}$ for all $x \in X$ (Source: Chiappero Martinetti 2000)

Here μ_A is the membership function which takes its values in the closed interval (0,1) (i.e between 0 and 1). Each value of $\mu_A(x)$ is the degree of membership of x to A. If $\mu_A(x) = 0$ the x is not an element of A, if $\mu_A(x) = 1$ then x is an element of A. Finally, if $0 < \mu_A(x) < 1$ then x partially belongs to A and its degree of membership is given by the value $\mu_A(x)$. The degree of membership of x to sub-set A rises as the values of $\mu_A(x)$ get closer to 1.

The above can best be illustrated by a practical example. Assume that sub-set A refers to a population's attainment of a certain functioning, for example the functioning of being educated. An individual i_1 can be considered definitely part of this sub-set "the educated" if she has, for arguments sake, completed 12 years of school education. Similarly a second individual i_2 with no education can clearly be excluded from this sub-set "the educated". Can a third individual i_3 who has successfully completed primary education (7 years of school education) not be considered educated to some degree? Fuzzy set theory argues for i_3 's partial inclusion into the sub-set of "the educated", and the membership value assigned to her depends on how the membership function was defined. This membership value will, by definition, lie between 0 and 1, moreover the closer this value gets to 1, the closer the achieved education attainment gets to the "completed 12 years of school education" goal. Thus the membership value assigned to "no education" = 0 < "some primary education" < "completed primary" < "some secondary education" < "completed 12 years" = 1

4.3.2 Selection and estimation of a fuzzy membership function

According to Lelli (2001:7) the only condition a membership function must satisfy is that it has to range between 0 and 1. Furthermore this function can take a variety of shapes depending on the application context and the nature of the functioning. Two main approaches have been proposed in the literature, namely membership functions based on i) distance and ii) frequency.

A linear function is an example of a distance based membership function. In the education functioning discussed above, one could argue that the degree of membership increases linearly with each successive year of school education completed. With a linear function each of the modalities (years of school) are considered equidistant from each other; moreover it assumes a direct proportionality between the modalities and the membership value assigned. With respect to Equation 4.1 below, x_{min} represents the modality associated with being poor, while x_{max} represents the not poor modality and all intervening modalities are proportionally calculated with reference to these two limits.

$$\mu_x \begin{cases} 0 \ \ if \ x = x_{min} \\ \dfrac{(x - x_{min})}{(x_{max} - x_{min})} \\ 1 \ \ if \ x = x_{max} \end{cases} \qquad \text{(Equation 4.1)}$$

Figure 4.1. below graphically illustrates a linear membership function for the education example discussed above. Here the membership value assigned to individual i_3 with 7 years of education would be 0.58.

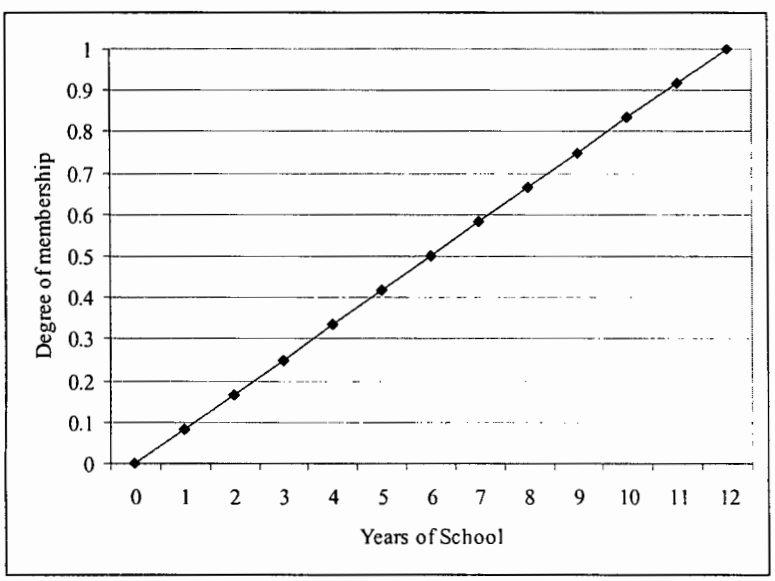


Figure 4.1: An example of a liner membership function

A quadratic sigmoid (logistic) membership function can also be applied. This curve is defined by 3 parameters, namely α (non-membership), γ full-membership and the cross overpoint β ($\beta = \alpha + \gamma/2$) whose membership value = 0.5. Intermediate membership values that fall in the intervals $[\alpha, \beta]$ and $[\beta,\gamma]$ are calculated through quadratic interpolation, and the membership function can be specified as follows:

$$\mu_x \begin{cases} 0 \ \textit{if} \ x \leq \alpha \\ 2\,[(x-\alpha)/(\gamma-\alpha)]^2 \ \text{if} \ \alpha \leq x \leq \beta \\ 1-2[\alpha-\gamma)/(\gamma-\alpha]^2 \ \text{if} \ \beta \leq x \leq \gamma \\ 1 \ \textit{if} \ x > \gamma \end{cases} \qquad \text{(Equation 4.2)}$$

Figure 4.2 graphically illustrates this membership function (Equation 4.2) and once more uses the education example described above. For the quadratic sigmoid case, the value assigned to individual i_3 with 7 years if education is higher than the linear case namely 0.65 versus 0.58.

The advantages of this type of membership function is its adaptability. The parameters α, β, γ can be adjusted without changing the shape of the curve. Moreover an increasing curve such as the sigmoid can be justified if the belief that x is an element of sub-set A is strengthened the nearer the membership value lies to 1 (full membership). This type of function is suitable to model quantitative and qualitative variables with modalities that are not equidistant (Lelli, 2001).

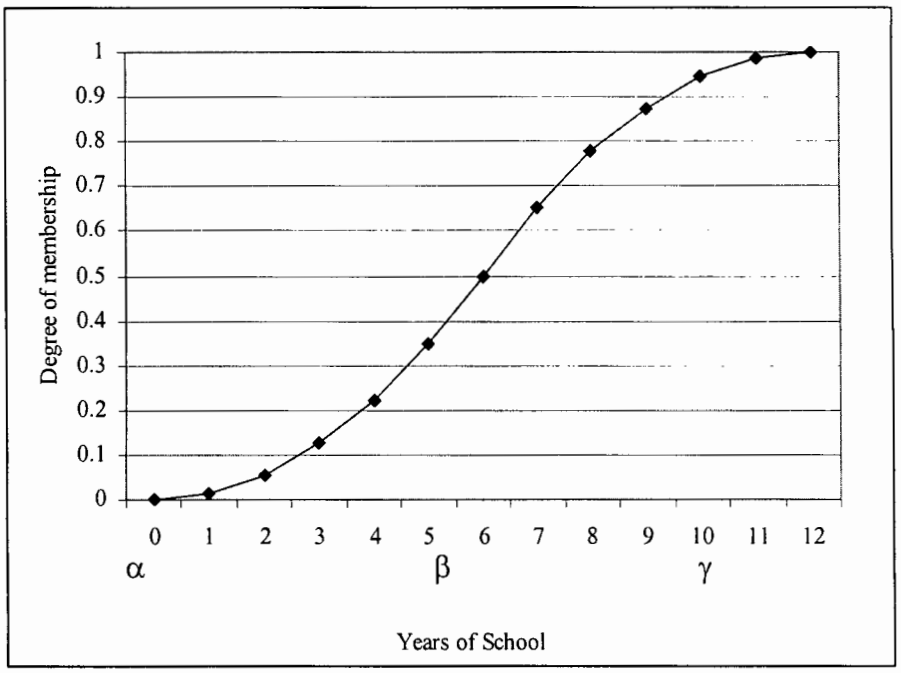


Figure 4.2: Sigmoid Membership Function

An alternative to distance based membership functions is the notion of frequency. If it is assumed that social context plays a crucial role in determining the extent of deprivation then it has be proposed that the membership function applied must be defined with reference to the distribution of a functioning within the society under review.

Cheli and Lemmi (1995) were the first to formulate such a function for polytomic (categorical) variables. They suggested arranging the modalities or possible categories of x in order of their associated risk of deprivation (i.e from the category which denotes most deprived to least deprived) where k = 1,…,K. If F (x^k) denotes the cumulative distribution of x ranked according to k then the following specification is valid:

$$\mu(x) = \begin{cases} 0 & \text{if } x = x;\ k=1 \\ \mu(x^{k-1}) + \dfrac{F(x^{k}) - F(x^{k-1})}{1 - F(x^{1})} & \text{if } x=xk;\ k>1 \\ 1 & \text{if } x = xk,\ k=K \end{cases} \qquad \text{(Equation 4.3)}$$

As can be noted from Equation 4.3 the lowest and highest ranks (k=1 and k=K) are reserved for the categories poor [$\mu(x) = 0$] and not poor [$\mu(x) = 1$], while intermediate values [] are reserved for all other categories relating to their position inside the distribution.

For the education example, the value 0 is the lowest while 12 is the highest. The intermediate values would depend on the distribution of education within a given society. Figure shows the cumulative distribution of education for the Western Cape and the accompanying fuzzy scoring associated with that distribution. Based on this figure, those who had completed primary school education were assigned a fuzzy membership to the group of the educated of 0.23.

Qizilbash (2001:9) notes that this Chelli and Lemmi frequency based membership specification can be thought of as a relativist measure of deprivation since it relates to "..how many people are worse off than one is, in the ambiguous region between definite poverty and non-poverty".

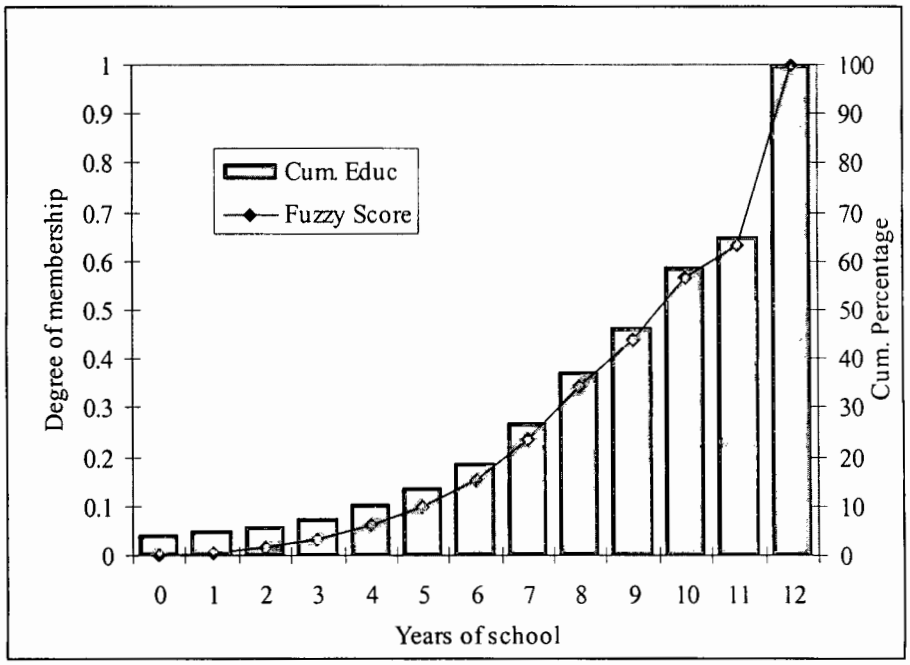


Figure 4.4: Chelli and Lemmi frequency based membership function

4.3.3 Aggregating indicators fuzzy sets

Based on the indicator or functioning being examined, each person is assigned a fuzzy score indicating their degree of membership of the set of the "not poor". These individual scores now have to be aggregated across dimensions so as to arrive at an aggregated fuzzy sub-set of the "not poor". Thus individual fuzzy scores for each of the dimensions have to be transformed in order to generate new membership scores for the composite or aggregate sub-set of "not-poor" (Chiappero Martinetti, 2001; Lelli, 2001).

Similar to classical set theory, fuzzy sets allow for basic operations between indicator and functioning sets such as union and intersection. In the case of union and intersection the emphasis is on the maximum (full-membership) and the minimum (full-exclusion) operators respectively. In terms of the standard union, the best dimension of each of the sets being aggregated is what is relevant, and union corresponds with the logical conjunction "or". Thus the aggregation between the two sets is based on the satisfaction of at least one of the conditions for full membership to the set "not poor"'. This can be specified as follows:

$\mu_{A\cup B} = \max [\mu_A, \mu_B]$

As can be seen, the resulting union $\mu_{A\cup B}$ will be higher than both μ_A and μ_B.

Fuzzy intersection on the other hand is concerned with the fulfilment of each of the sets to the minimum elementary condition specified, and is related to the logical conjunction "and". In this case, the membership grade of the composite fuzzy set generated through intersection will be lower than the value of μ_A and μ_B. Intersection is specified as:

$\mu_{A\cap B} = \min [\mu_A, \mu_B]$

The difference between union and intersection can best be illustrated with a practical example. Assuming a housing functioning is related to two indicators, housing type and density (crowding). In the case of union, a person can be considered adequately housed if they live for example either i) in a formal dwelling **or** ii) their density is such that each household member has their own room. Intersection on the other hand requires that for someone to be considered adequately housed they must as a minimum live in a i) formal dwelling **and** ii) their density is such that each household member has their own room.

An alternative to union and intersection is the application of averaging operators between fuzzy sets. This allows for the membership grades of each element in the aggregated set to lie between the minimum and maximum of μ_A and μ_B. As Chiappero Martinetti (2001) states, averaging operators, unlike union and intersection, allow the concept of compensation to be introduced between dimensions. With respect to person *x*, their aggregated fuzzy score calculated on the basis of an unweighted averaging operator can be specified as follows:

$\mu_{AB}(x) = [(\mu_A + \mu_B)/n]^{1/\alpha}$

Note n is the number of dimensions being aggregated while $\alpha = 1$ for the arithmetic mean, $\alpha = -1$ for the harmonic mean and $\alpha=0$ for the geometric mean.

As can be seen from the averaging operator specified above, the weight assigned to each of the dimensions is neutral. Alternatively, it can be argued that some indicators of wellbeing or development are more important than others and they need to be assigned a higher or lower weight to reflect this. A commonly used alternative to equal weighing is the application of a frequency based weighing system. As already indicated in Section 4.2, frequency based weighting systems "let the data speak for themselves" with weights being calculated by examining the relative frequency of an attribute. The lower the proportion of people in a society deprived of a certain indicator or functioning, the higher the weight assigned to that attribute. This is premised on the view that there is "some kind of relief induced by the sharing of a negative experience with others" (Lelli 2001:10). Such a weighing structure has been specified by Cerioli and Zani and is defined below.

$W_i = - \ln [1/n \sum \mu_i (x)]$

4.4 CLOSURE

The objective of this Chapter was to determine the extent to which the human development approach is practically operational. As was shown, the application of this approach is demanding, numerous issues have to be addressed with the researcher being called upon to make a range of normative methodological decisions. Section 4.3 offered a comparative review of the various studies that have employed the human development approach together with their accompanying methodologies. This review drew attention to what consequences some of these methodological decisions can have on the derived results.

The final part of Chapter Four presented the theory of fuzzy sets in some detail, this analysis will once more be taken up in Chapter Six when the development status of Western Cape farm workers is examined. Chapter Five that follows, serves as introduction to this empirical research.

CHAPTER FIVE

THE POSITION OF FARM WORKERS IN THE WESTERN CAPE AGRICULTURAL ECONOMY

5.1 INTRODUCTION

The objective of this chapter is to present an overview of the Western Cape agricultural economy and review a number of the policy-induced structural changes that have impacted on the demand and supply for farm labour in recent years. This analysis will show the extent to which the agricultural labour sector has become increasingly regulated in an attempt to address poor working conditions in the sector. This chapter is intended to serve as a background to the empirical analysis presented in Chapter Six which measures the absolute and relative development status of Western Cape farm workers for the period 1996-2001.

Chapter Five begins by presenting a number of aggregate human development indicators for South Africa and by highlighting the extent to which the Western Cape can be considered relatively more developed *vis-a-vis* the rest of South Africa. The analysis will go further and argue that such an aggregate statistic conceals the fact that pockets of poverty are found within the Western Cape. Furthermore, this poverty tends to be concentrated in the rural areas amongst black and coloured households and in particular, amongst farm worker communities. The ability of the agricultural sector to remedy this situation depends on the supply and demand for farm labour. With respect to labour demand, this is derived from the local and international demand for the region's agricultural products. For this reason an overview of the Western Cape agricultural sector is presented in Section 5.3. Given its relevance as a determinant of labour supply conditions, the last part of the Chapter focuses on both employment trends and labour regulations impacting on Western Cape farm workers.

5.2 THE WESTERN CAPE: HUMAN DEVELOPMENT STATUS

Table 5.1 below presents a range of comparative development indicators for South Africa for the period 1990-2002. As can be seen from the data, in 2002 South Africa achieved an HDI of 0.68 and can thus be regarded as a medium developed country. Table 5.1 shows how South Africa's HDI increased from 0.72 in 1990 to 0.75 in 1996 before declining to 0.68 in 2002 as the impact of HIV/AIDS eroded the life expectancy component of the index. Similarly in 1995, South Africa's Human Poverty Index (HPI) was 16.4 and this increased to 22.3 in 2001, indicating an increase in

poverty. Over much of the same period, namely 1995-2002, the income poverty gap was seen to improve; the percentage of South Africans living below the income poverty line decreased from 51,1% in 1995 to 48.5% in 2002 (UNDP, 2003).

Table 5.1 further disaggregates these poverty statistics by province, race, and location and the following conclusions can be drawn from these data:

- With respect to the HDI, in 2002 the Western Cape scored the highest of all the provinces achieving a score of 0.77. It was also the province which experienced the smallest absolute and relative decline in human development for the 1995-2003 period. Table 5.1 also shows the extent to which rural households lag behind their urban counterparts, however this gap does appear to be narrowing.
- The Western Cape was found to have the lowest HPI of all the provinces - roughly half the South African average of 22.3. As can be seen from Table 5.1, the African population group's HPI of 25.3 was significantly above the South African average.
- Changes in these composite poverty indices should be contrasted with changes in income poverty. As can be seen Gauteng had the lowest incidence of income poverty in 2002, with 20% of the population living below the poverty line. For the Western Cape, this percentage was 28,8%, significantly below the South African average of 48.5%.

Table 5.1: South African Development Indicators, 1990-2002

		HDI			HPI		National Poverty Line	
		1995	2000	2002	1995	2001	1995 %	2002 %
South Africa		0.73	0.70	0.68	16.4	22.3	51.1	48.5
Province	Western Cape	0.79	0.78	0.77	9.8	11.5	28.6	28.8
	Eastern Cape	0.67	0.64	0.63	23.3	24.3	71.2	68.3
	Northern Cape	0.72	0.70	0.69	16.5	16.9	55.4	54.4
	Free Sate	0.74	0.70	0.68	14.6	22.3	63.6	59.9
	KwaZulu-Natal	0.71	0.67	0.64	16.5	27.0	53.2	50.5
	North West	0.68	0.64	0.62	22.8	25.0	59.4	56.5
	Gauteng	0.81	0.77	0.75	10.3	19.0	18.4	20.0
	Mpumalanga	0.72	0.68	0.66	19.5	26.0	59.7	54.8
	Limpopo	0.64	0.62	0.60	20.3	22.1	62.7	60.7
Gender	Male	n.a		n.a	17.1	22.5	48.9	45.9
	Female	n.a		n.a	15.5	21.6	53.4	50.9
Location	Urban	n.a	0.77	n.a	11.4	18.6	n.a	n.a
	Rural	n.a	0.64	n.a	23.1	24.0	n.a	n.a
Race	African	n.a	0.64	n.a	19.0	25.3	62.0	56.3
	Coloured	n.a	0.72	n.a	9.6	11.5	38.5	36.1
	White	n.a	0.90	n.a	3.5	4.3	1.5	6.9

Source: UNDP (2003)

Moving beyond aggregate index calculations, the Development Bank of Southern Africa (DBSA) was the first to apply the broader human development methodology to South Africa. In 1994, they published a human development profile of South Africa's nine newly demarcated provinces. This profile was significant in that it not only provided a basis for assessing South Africa's overall development status but it also drew attention to interregional human development inequalities that exist across the country. This research found the Western Cape to be the most developed province with a human development index of 0.76 (Erasmus, 1994). While such a statistic is useful and relevant, it obscures the intra-regional inequalities that characterize the province. The DBSA study noted this point and stated:

> "The Western Cape exhibits the highest HDI in South Africa. At the same time there are severe inequalities between various race groups. The White population reflects an HDI that would compare with that of the five most developed nations in the world while coloured people in rural areas reflect an HDI comparable to the lowest in the world." (Erasmus, 1994:41).

A subsequent study by Whiteford *et al* in 1995, quantified the extent of this human development disparity on a racial and regional basis when an HDI for each of South Africa's 408 magisterial districts was calculated by race. Table 5.2 below shows the HDI's ranges calculated for the various magisterial districts of Western Cape with these being grouped according to the metro and non-metro areas of the province. These results, while somewhat dated, suggest significant racial and intra-regional inequality with respect to human development status.

Table 5.2: Western Cape Human Development Index

	HDI Range
Western Cape	0.76
Western Cape Metropole Area	
White Households	0.93-0.96
Coloured Households	0.59-0.68
Black Households	0.40-0.53
Western Cape Non-Metro Areas	
White Households	0.91-0.96
Coloured Households	0.35-0.57
Black Households	0.21-0.51

Source: Erasmus (1994), Whiteford *et al* (1995)

Focussing on Western Cape farm workers, a number of research studies have identified these as a group whose development status is particularly low. The following data is illustrative of this:

- **Low levels of education and literacy:** London (2003) found that in 1996, the median level of schooling found amongst farm workers was less than 6 years while illiteracy was estimated to be 20% among the province's adult farm workers.
- **Housing conditions:** An unpublished survey conducted among Western Cape wine farm workers in 1995 found that less than 50% of worker households had indoor running water and even fewer (45%) has access to a flush toilet (Ewert *et a.,l* 2001).
- **Poor health conditions**: The incidence of infectious diseases, especially tuberculosis, is considered to be abnormally high among farm worker. The tuberculosis incidence rates for the Western Cape farming areas exceed 1,000 per 100,000 of the population, rates two to three times higher than those found in urban areas (London, 2003).
- **Poor working conditions:** The results of a survey conducted by Sunde and Kleinbooi (1999) found there to be very poor compliance with legislation pertaining to labour rights. For example less than 1 third of all women farm workers they interviewed had a written contract and 48% claimed they did not get sick leave.
- **Low wages:** Data from 2002 Agricultural Census found that the average remuneration per full-time employee in the Western Cape to be R 1189 per month. This average hides considerable gender inequality. For example, during a survey conducted in 1999, more 56% of women farm workers interviewed reported that there was a difference between the wages of men and women for equal work (Sunde and Kleinbooi, 1999).

These issues will be systematically analysed and validated in Chapter 6 which follows.

5.3 THE WESTERN CAPE AGRICULTURAL SECTOR

5.3.1 An Overview of the Western Cape Agricultural Sector

The agriculture sector is an important component of the Western Cape economy, especially in the non-metropolitan areas of the province. In 2001, agriculture accounted for 5.2% of the Western Cape's Gross Regional Product while it provided 13.8% of all Western Cape employment opportunities (StatsSA, 2002; Census, 01).

In the South African agricultural context, the Western Cape can be considered unique. The province's relatively consistent and adequate winter rainfall pattern has allowed for production

stability and export-orientated output growth. As can be seen from Table 5.3 below, over the past 25 years this has translated into a comparatively high rate of GDP growth for the sector. Since at least the mid-1970s, not only has agriculture in the Western Cape grown faster than the rest of the Western Cape economy, but since the mid-1980s it has also grown faster than the economy of South Africa.

Table 5.3: Real GDP growth by sector in the Western Cape economy, 1975-2001

Sector	1975-1980	1985-1990	1996-2001
Western Cape Agriculture	1.9	5.1	2.3
Western Cape	1.5	1.6	2.3
South Africa	3.1	1.6	2.0
SA Agriculture	4.1	3.7	0.7

Source: Viljoen and Eckert (1997) and StatsSA (2002)

There are an estimated 7185 farming units in the Western Cape, and the average commercial farm size for the province is 1,227ha. This is less than the national average of 1,427ha (StatsSA, 2004). Within the province, however, farm size varies with land quality and crop type. In the more arid regions of the province such as the Karoo average farm size is 5087 ha while in the high yielding areas surrounding the Cape Metropole such as Stellenbosch, average farm size is considerably smaller namely 140.7 ha (DAG, 1994).

Aside from differences with respect to farm size, the key structural difference between the agricultural sector of the Western Cape and South Africa's other eight provinces relates to the dominance of horticultural production - more than 55% of gross farming income in the Western Cape is generated from the sale of horticultural products while the comparative national figure is 22% (StatsSA, 2004). The following features of the Western Cape agricultural economy are indicative of this output structure:

- **Labour using production processes:** Production processes in the Western Cape are relatively more labour intensive than the rest of South Africa. The Western Cape makes up less than 13% of the agricultural land in South Africa while it employs 23% of all farm

workers[37]. Average worker remuneration for the province is also considerably higher than the national average – R 7945 versus R6607.

- **Gross farm income**: Farmers' gross income per hectare and per worker is higher in the Western Cape than the average for the rest of the country. Higher wages and higher profits mean that the purchasing power, and thus the multiplier effect of the sector on the economy of the Western Cape rural areas is higher than in other parts of the country.
- **Current and capital expenditure**: Western Cape farmers buy relatively more intermediate inputs, and their level of capital investment is also relatively higher. To the extent that capital and intermediate goods are purchased within the province, this also reflects on stronger linkages with the rest of the economy.
- **Debt/Equity levels**: A comparison between the relative level of capital investment and the relative level of indebtedness shows that a greater proportion of capital investment is funded in the Western Cape by means of equity rather than debt.

Table 5.4: Western Cape Agriculture in Perspective, 2002

	RSA (total)	Western Cape	Western Cape/RSA (%)
Farming area (ha)	82,748,886	10,249,642	12.4
Number of farms	45,818	7185	15.7
Average farm size (ha)	1,427	1,227	86.0
Number of farm workers	940,815	211,808	22.5
Gross remuneration (R'000)	6,215,583	1,682,857	27.1
Gross remuneration per worker (Rands)	6607	7945	120.3
Gross farming income (R'000)	52,971,232	10,653,332	20.1
Spending on intermediate inputs (R'000)	42,092,135	8,642,186	20.5
Capital expenditure (R'000)	2,946,773	682,574	23.2
Market Value of Assets	98,428,254	26,270,432	26.7
Total debt (R'000)	30,857,891	7,304,531	23.7
Debt/Equity Ratio	0.31	0.28	88.7

Source: StatsSA (2004)

As noted, horticultural production dominates output in the province and as can be seen from Table 5.5, the main agricultural products of the Western Cape include fruit, viticulture (wine), vegetables, winter grains and white meat.

[37] The employment intensity of horticultural production is considerably higher than fields crop and animal production. The average number of hectares cultivated per permanant worker is 12,97 hectares for horticultural production, 33.64 hectares for field crop production and 188.77 hectares for animal production (Vink *et al.*, 2001)

Table 5.5: Main Western Cape Agricultural Products

	% of gross value
Fruit	20
Wine	12
Vegetables	12
Winter grains	15
White meat	14
Red meat	7
Other animal	8
Dairy	6
Eggs	4
Animal fibre	1
Other crops	1

Source: Wesgro (2002)

Western Cape climatic conditions are ideal for the production of both deciduous fruit and citrus. With respect to deciduous fruit, the bulk of the industry's production is concentrated in the province while in the case of citrus this is estimated at between 15-20% (Table 5.6). Table 5.6 shows the comparative production and export growth rates for South Africa's various fruit crops. As can be seen from Table 5.6 stonefruit, tablegrapes and citrus export volumes have grown faster than production, accelerated by the deregulation of the industry. Up until 1997, the South African fruit industry was governed by a single channel marketing system; however, in early 1998, these Control Boards were abolished and currently there are more than 100 exporters (marketing agents) active in the industry.

One of the main features of the era of regulation was the concentration of sales to Europe, and specifically the UK and Germany, partly as a result of historically strong trade relations and familiarity with their export requirements[38]. For example, in 1997 almost 80% of apple exports were sent to Europe, while no other single market received more than 5% of the total (Tregurtha and Vink, 2004). Table 5.6 below shows that while this pattern of market concentration has become less concentrated in the post-deregulation period, the EU and in particular the United Kingdom remains a key market.

[38] Phytosanitary standards were, for example, more stringent in the USA and Asian markets.

Table 5.6: South Africa and Western Cape Fruit Production

	Apples	Pears	Stonefruit	Table Grapes	Citrus
Hectares SA	22,952	13,455	18,823	18,895	n.a
% in Western Cape	80	90	91	53	15-20
Production Tons	680,942	279,811	442,178	404,769	1,832,483
Production Growth (1990-2003)	1.5	1.2	5.6	7	6.6
% of crop exported	35	35.5	5.6	56.7	60
Export Growth	1.2	-1.4	12.2	9.4	9.3

Source: Abstract (2004), DFPT (2002)

Within the United Kingdom, large supermarket chains known as multiples, have become the main retail outlet for fresh produce with a market share of more than 70%. They directly contract with importers and exporters and thus by-pass traditional wholesale markets. Furthermore, this direct relationship allows the multiples to specify supply conditions and aim for consistency and quality of produce plus efficiency in supply. Consequently, their standards are normally higher than those set by UK or EU regulations. Given the dominant position of multiples in the retail of fresh produce, fruit exporters servicing the United Kingdom market have to adopt buyer-specified codes of conduct, and the multiples are in a position to monitor this. In the past, environmental concerns were addressed through the application of Integrated Crop Management systems, and these are now being extended to social conditions through the development of codes of conduct covering labour (Barrientos *et al.,* 1999). Continued market access into UK supermarkets will therefore depend on the extent to which Western Cape producers are able to comply with these standards and address labour issues.

Table5.7: South African Fruit Exports – Main destinations, 2003

	UK	Other Europe	Europe Total	Other
Apples	38	25	63	37
Pears	20	56	76	24
Peaches	45	13	58	42
Grapes	19	59	78	22
Oranges	14	28	42	58

Source: Interactive Trade Map (2004)

South Africa is the world's tenth largest wine producer, accounting for 2.5% of global production (SAWIS, 2004). In 2003, the turnover of the industry was estimated at R10,675 million of which more than one third was generated by export sales. The Western Cape is home to most of South Africa's wineries, with the province accounting for 92% of wine grape production. The current robust image of the South African wine industry should be contrasted with the state of the sector at the start of the 1990s. In 1992, industry controls were systematically dismantled and this

deregulation allowed domestic producers to begin supplying international wine markets which had opened up as a result of the lifting of sanctions.

Much of the growth in the South African wine industry over the past decade has been due to its export performance. From 1992-2003 exports grew at an average rate of 24,4% per annum, and the current export propensity of the industry is 30%. With respect to destination, South Africa's wine exports are heavily concentrated in the European Union, with the United Kingdom absorbing 44% of exports, followed by the Netherlands (18%) and Germany (8%). Focusing on the UK market, in 2004 for the first time South African wine sales into this country exceeded the 10% mark in volume and value. Furthermore, while other wine producing countries have been forced to reduce their retail price in the UK market, South Africa has managed to increase its average selling price from £3,68 to £3,80 per bottle (WOSA, 2004).

A major factor influencing South Africa's ability to grow its market share in the European Union, is the increasing emphasis this region's consumers are placing on the origin of products and production processes. For the South African industry this translates into concerns about i) employment conditions of farm workers (ethical trade movement), ii) the success of the land reform programme and other transformation issues, iii) environmental factors and iv) the traceablity of products due to concerns about the use of genetically modified material and the protection of Designations of Origin (NAMC, 2002).

Given the suitability of the regional climate, vegetable production is an important component of Western Cape agriculture, representing some 12% of total production. Most trade in fresh produce is either through the major urban fresh produce markets, through farmer organisations like Potato South Africa and the Onion Forum or direct contract sales. Trade in vegetables through the Epping Fresh Produce Market in Cape Town is some 150 million tons annually, although this figure does not take into account an estimated 50% of production that is traded via the informal sector, produced under contract for major supermarket chains or exported, largely to the EU. In 1999, some 9800 hectares of land in the Western Cape was planted with potatoes, producing over 323 000 tons. More than 80% of the national crop is sold fresh or as seed, most of the balance being processed into French fries and crisps, although a small percentage is also used for baby food, mixed vegetables and canning. The yield from the province's 3 200 hectares of onion fields in 1999 was 152 000 tons. Nearly 23 000 tons of fresh tomatoes were also produced, excluding those destined for processing. In addition, the Western Cape accounts for 80-90% of national vegetable seed production (Wesgro, 2002).

The Western Cape broiler industry produces some 135 000 tons annually, accounting for approximately 17% of national production, which is worth almost R6bn at producer level (Wesgro, 2002). Most poultry production units are situated close to metropolitan markets and the highly concentrated broiler industry structure suggests it has more in common with manufacturing than agriculture. It has been estimated that 15 large producers are responsible for 66% of all broiler production, with 4 of these slaughtering more than 600,000 birds per week and the remaining 11 slaughtering between 50,000 and 600,000 birds (NDA, 2003).

In terms of winter grains, the province is the country's sole grower of hops – primarily in the area around George – as well as its major barley grower, producing nearly 80% of South Africa's 180 000 tons of barley in 2002. The Western Cape is traditionally the country's second largest wheat producer, with 43% of its wheat fields. The competitiveness of wheat production in the province has recently come under scrutiny. Two successive years of drought have seen output decline from 800,000 tons to 530,000 tons. Furthermore, imports normally buffered by the Rand/US$ exchange rates have put pressure on local prices. Under these conditions, normal provincial yield levels of 1,5 tons per hectare are too low to sustain the industry in the long run (Gleason, 2005).

5.3.2 Western Cape Agriculture: Key Determinants of Success

The data presented in the previous section show that the Western Cape agricultural sector has grown over the past decade primarily as a result of the rapid growth in wine, citrus and table grape exports. However, the ability of the Western Cape to continue to expand is agricultural sector depends on a range of factors, which include the level of export market demand, resource availability and regulatory factors

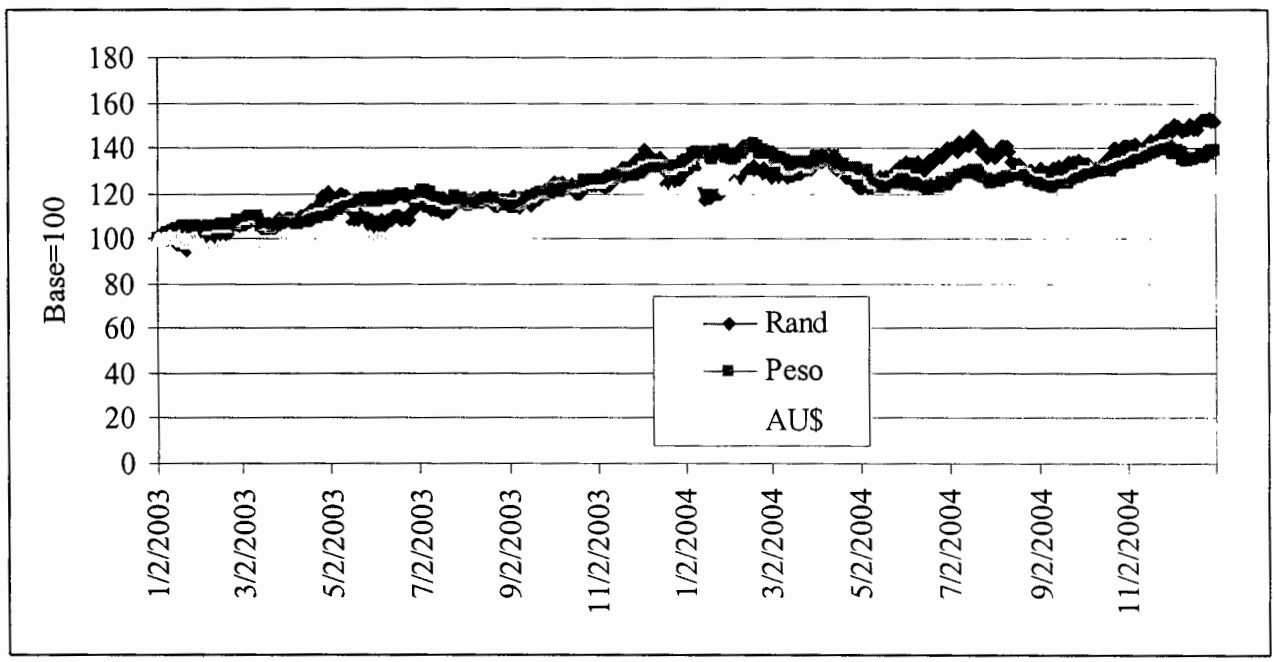
5.3.2.1 The level of market demand

South Africa is a relatively small player in most of the foreign markets to which Western Cape farmers sell their products. For this reason, exporters should be able to continue exploiting growing markets, and to shift exports to markets with higher growth over time. However, continued expansion in exports is dependent on a) farmers' ability to maintain their competitive position; b) the exchange rate; and c) growth in world markets.

With respect to maintaining their competitive position, farmers' profit margins have come under increasing pressure since 1995. From 1995 to 2002, producer prices for fruit, vegetables and viticulture products increased by 41.6%, 44,2% and 54.2% respectively. Over the same period, the

cost of farming implements and intermediate inputs increased by 61.2% ad 84.8% respectively (Abstract, 2003).

The steady depreciation of the Rand over the past decade helped boost export earnings however, the strong appreciation of the Rand over the past 2 years does not bode well for Western Cape exporters. Figure 5.1 below shows the appreciation of the Rand relative to the US Dollar, furthermore it shows how the South African currency has appreciated relatively more than the currencies of our main competitors Chile and the Australia.



Source: Oanda (2003)

Figure 5.1: Exchange Rate, US$ vs South African Rand, Austrailan $ and Chilean Peso, 2003-2005

Farmers' competitive position will depend on the extent to which supply chains can be kept competitive and on farmers' ability to find and adapt new technologies. The two most important variables in this regard are the logistical costs of getting perishable products to the market (i.e. the availability of high quality transport infrastructure, port facilities, etc.) and the funding of agricultural research and development initiatives. In terms of agro-logistics, a 1997 study showed how the expansion of the local fynbos industry was hampered by a lack of affordable airline freight space into the European Union (Allerts *et al.*, 1998). Similarly, a study on the cold fruit supply chain between South Africa and the Netherlands identified various infrastructure capacity problems such as insufficient cold storage facilities in certain regions, not enough refrigerated trucks suitable

for fruit transport and bottlenecks in the fruit terminals as barriers to industry development (Broens *et al.*, 2000).

5.3.2.2 Resource Availability

Many of the agricultural products in the Western Cape require specific kinds of soils, characterised by slope, rainfall, soil composition, etc., and soils are a scarce resource. The availability of soils is also dependent on farmers' willingness to invest in fixed improvements to soil, hence on a stable investment climate. Much of agricultural production is also dependent on irrigation, hence the availability of water, where competition from urban areas for scarce water resources is strong, will play an important role in determining the future growth potential of agriculture.

This point is illustrated by the fact that although the most important source of water in the Western Cape, the Berg-Breede Basin, yielded a surplus of 617 million cubic metres in 1996, a deficit of 834 million m^3 /year is projected for this system by 2030. This deficit is due to a trebling in urban and domestic demand as well as an increase in industrial use. The Berg/Breede system has the scarcest water in the country and Leiman *et al* (2000) indicate that it is the only South African case where agriculture, as low value user, will have to transfer some of its water resource allocation to urban and industrial users. This expected shift will have serious consequences for the development of intensive agriculture in the Western Cape and require significant investment in new irrigation systems along the alternative Olifants/Doring River system.

5.3.2.3 The regulatory environment

Most farms are operated as small and medium scale enterprises. As such, these businesses are as subject to the disincentive effects of bureaucratic red tape, as their urban counterparts. These include the provisions of tax, environmental and labour laws that were designed to suit the needs of big business, and often hamper the growth of SMMEs. The increasing regulation of the agricultural labour market will be described in Section 5.4 below and the impact this has had on employment patterns will be examined.

5.4 WESTERN CAPE FARM WORKER EMPLOYMENT AND REMUNERATION TRENDS

5.4.1 Employment Trends

As already indicated, the Western Cape agriculture sector is an important source of employment, particularly in the rural areas of the province. Census 2001, estimated that in the non-metro areas of

the province more than 27% of the job opportunities are provided by the agriculture and hunting sector. Table 5.8 below shows comparative Western Cape and South Africa agricultural employment levels and growth rates for period 1980-2002.

Table 5.8: Agricultural Employment Trends, 1980-2002

Year	South Africa	Western Cape			Western Cape %
	Total	Regular	Casual	Total	
1980	1,235,200	91,518	66,451	157,969	12.8
1985	1,323,700	105,341	76,566	181,907	13.7
1988	1,219,600	111,120	96,566	207,686	17.0
1992	1,051,200	125,437	109,610	235,047	22.4
1993	1,093,265	104,615	98334	202,949	18.6
1994	921,651	129,345	74,454	203,799	22.1
1995	890,962	117,488	66,197	183,685	20.6
1996	914,473	127,918	70,460	198,378	21.7
2002	940,815	94,659	117,149	211,808	22.5
Growth Rates					
1980-1993	-0.93	1.03	3.06	1.95	
1993-2002	-1.65	-1.11	1.96	0.48	
1980-2002	-1.23	0.15	2.61	1.34	

Source: Viljoen and Eckert (1995), Orkin and Ngobe (2000) and StatsSA (2004)

These data show that on a national level the agricultural sector has shed approximately 300,000 jobs since 1980. Western Cape agricultural employment, in contrast, expanded at a rate of 1.34 % per annum for the same period. However, most of the jobs it created were of a casual or seasonal nature and can be attributed to the large increase in exports of fruit and wine (the sector that is the largest user of casual and seasonal labour) that was experienced during this period.

The rate of labour change in the agricultural sector has not been uniform over the past two decades and when analyzing South African trends, 1993 is an important reference point. Prior to 1993, South African farm workers were not covered by any labour protection or collective bargaining legislation. Farm life was regulated by paternalism and a set of informal "farm rules" dictated by the relevant farm owner. In 1993, farm workers were included under the provisions of the Unemployment Insurance Act and basic employment rights were extended to them when the Agricultural Labour Act was passed in 1993. In 1993, the provisions of the Basic Conditions of Employment Act (substantially revised in 1997) were also extended to agricultural workers. This Act stipulates minimum labour standards and prescribes, amongst others, the maximum working week, vacation and sick leave allowances and payment for overtime.

The Extension of Security of Tenure Act ratified in 1997, ensures that occupiers of rural land earning less than R5000 per month have security of tenure. As a result of this act, landowners who wish to evict those living on farms can only terminate these rights under relatively strict conditions. Finally, minimum wages in most sectors are set by industry bargaining councils however, given that the agricultural sector was not significantly unionised and could therefore not establish a bargaining council, the Department of Labour set about establishing a minimum wage which it implemented in 2003. This sectoral determination not only set a floor on wage levels for agricultural workers but also specified what and how much could be deducted as an in-kind payment (Ewert *et al.*, 1998; Conradie, 2004).

The regulation of the agricultural labour market described here has impacted on the flexibility and unit cost of farm employment and has led to a number of structural changes in the labour market and employment patterns. The results of a number of micro-level surveys provide insight into these changes. The first of these surveys was carried out by Sunde and Kleinbooi in 1999. Sunde and Kleinbooi (1999) interviewed 112 farmers/managers and 345 woman farm workers to not only gauge the development status of these women but also to describe their location within the agricultural labour market and their access to socio-economic rights. Du Toit and Ally (2002) studied 77 horticultural farms in a number of Western Cape districts to assess changes taking place in the labour absorptiveness of the Western Cape horticulture sector as well as to explore the implications of this on the livelihoods of farm workers. Finally in 2003, Conradie (2004) interviewed 79 wine farm businesses in the Robertson and Worcester region to assess the initial employment impacts of the introduction of agricultural minimum wages. This survey also captured information on labour costs, workforce composition and the elasticity of demand for farm labour.

These surveys identified the following structural changes occurring in Western Cape labour patterns:

- **Substitution of permanent labour with temporary/part-time/seasonal labour:** Both Du Toit and Ally (2002) and Sunde and Kleinbooi (1999) found a marked shift away from the employment of permanent workers towards the employment of temporary workers. Reasons cited by farmers as factors inducing this shift include the Extension of Security of Tenure (ESTA) legislation, rising labour costs due to compliance with Basic Conditions and minimum wages.

- **Increased use of labour contracting**: Du Toit and Ally (2002) found that more than 53% of the farmers they interviewed indicated that they make use of an agricultural labour contractor/broker. In such an instance the employment relationship is no longer directly between the farmer and worker. Rather, a farmer concludes an arrangement with a broker who then supplies the farmer with a team of workers. While this externalisation of labour offers agricultural producers certain advantages such as the ability to control costs and risks, for farm workers this holds serious implications in terms of livelihoods and income. Rather than being "part of the farm" the relationship between workers and farmers is increasingly an indirect one-limited to cash payment for particular tasks completed (Du Toit and Ally, 2002).

- **Relative increase in the number of women farm workers employed**: Sunde and Kleinbooi (1999) found a significant increase in the number of women farm workers being employed on farms in the Western Cape. The main reasons cited for this are employers' attempts to maximise the utilization of the existing on-farm labour pool (and thereby control housing costs). The shift towards mixed farming systems has helped flatten the sharp seasonal labour demand peak and enabled farmers to employ women throughout the year. -

- **Job shedding as a result of minimum wages:** Six months after minimum wages had been implemented in agriculture, Conradie (2004) found the net employment effect to be less than 1%. She goes further to note that the most important consequence of the implementation of minimum wages was not wholesale labour shedding, rather it was a slow down in job creation for permanent workers at a time when output was expanding.

5.4.2 Remuneration Trends

As was shown in Table 5.4, the Western Cape's average remuneration (wage rates) per agricultural worker is 20% higher than the South African average. Based on the information contained in Figure 5.1 below it would be easy to conclude that Western Cape agricultural wage rates have declined significantly since 1996. This decline can be attributed to the changing composition of the labour force and the increasing proportion of casual/seasonal workers. In 1996 seasonal workers made up 35% of the industry while in 2002 they represented 54%. Conradie (2004) expected wage rates to have increased by 3% per annum from 1996-2003.

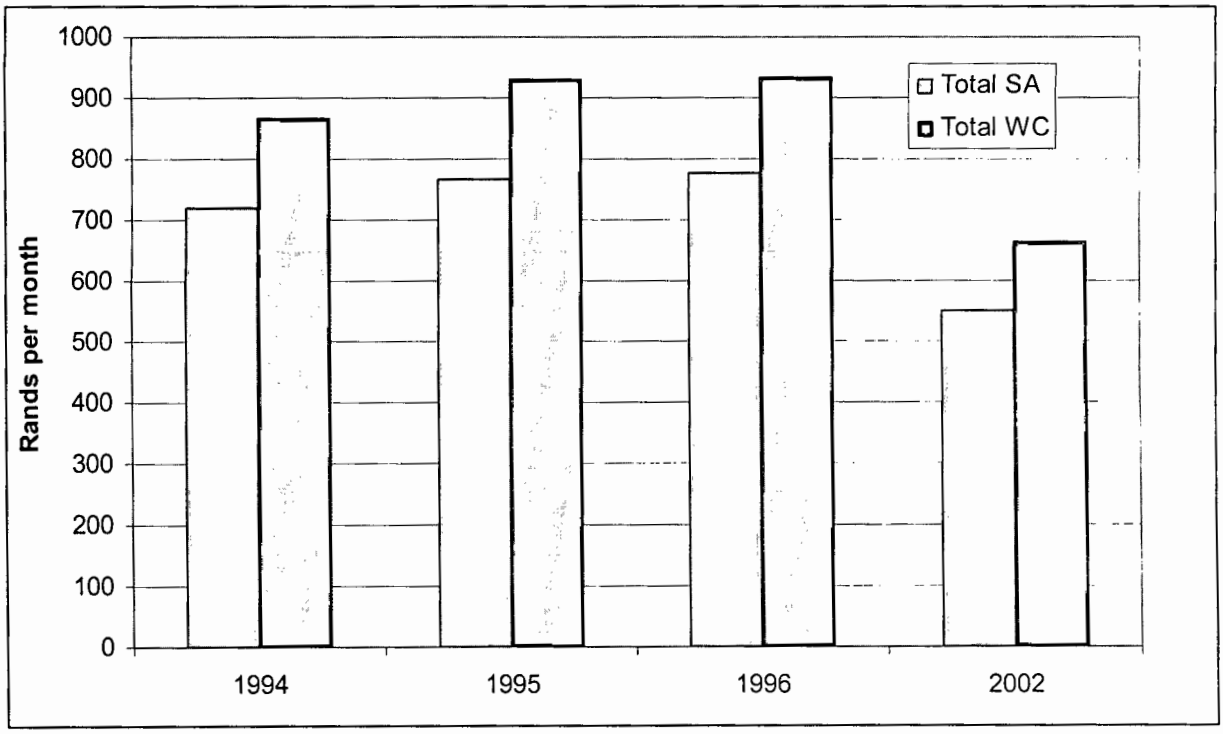


Figure 5.1: Real remuneration rates per worker, 1994-2002

It was anticipated that the introduction of an agricultural minimum wage would bring about a flattening of the wage distribution, as opposed to a significant increase in average wage levels (Vink *et al.*, 2001). The survey conducted by Conradie (2004) confirmed this hypothesis and as can be seen from Table 5.9 below, the introduction of minimum wages in early 2003 had the biggest impact on the lowest paid employees.

Table 5.9: Change in wages levels due to minimum wages, Feb-Aug 2003

	Mean (standard deviation)	
Wage category	**Robertson**	**Worcester**
Highest paid males		
August 2003 – R/month	R1 037	R1 031
	(338)	(408)
Avg. increase in 2003	5.58%	3.03%
Lowest paid man on a farm		
August 2003 – R/month	R777	R763
	(109)	(104)
Avg. % increase in 2003	6.47%	17.84%
Highest paid woman on a farm		
August 2003 – R/month	R652	R743
	(247)	(309)
Avg. % increase in 2003	5.12%	15.55%

Lowest paid woman on a farm		
August 2003 – R/month	R606	R646
	(133)	(156)
Avg. increase in 2003	6.46%	24.62%
Average worker		
2002/03 financial year	R865	R900
	(257)	(277)

Source: Conradie (2004)

Table 5.9 also attests to the significant wage differential that exists between male and female farm workers. Of the 110 employers that Sunde and Kleinbooi (1999) interviewed as part of their survey, 39% stated they do not pay women equal wages for work of equal value. The main reasons given were that men are perceived to be the breadwinner and that women are not employed as permanent workers.

In terms of the minimum wage sectoral determination, employees are allowed to deduct a maximum of 10% for food and 10% for housing. Previous agricultural surveys have found that the category "other remuneration" (which includes a range of in-kind benefits) constitutes about 20% of total farm worker remuneration[39]. Western Cape horticultural farmers rarely provide food and are thus limited to the 10% housing deduction. As wages become increasingly monetised workers may lose out in real terms if they are required to purchase a particular good or service such as housing in the open market. Conradie (1994:11) notes that "In this [current] paternalistic system farmers (or for that matter workers) rarely know what a particular service, for example childcare costs. They simply provide it when they deem necessary. As relationships become more formal and all payments are quantified farmers are less inclined to do what they have always done". Table 5.10 below shows Conradie's (2004) findings with respect to the percentage of farms that provide their workers with free and subsided services.

Table 5.10: Services given free of charge or subsidised to workers

	% Farms that provide free or subsidised services	
Benefit	**Robertson**	**Worcester**
Housing	97	90

[39] Included under the category "other remuneration" is the value of free housing and grazing provided to farm workers, and contributions to the Worker's Compensation Fund and Unemployment Insurance Fund made by farmers. Contributions to pension and medical funds are also included under 'other remuneration' as well as in-kind payments received by them. Under 'payments-in kind' the following items are specified; the value of rations such as maize flour, slaughter animals, meat, fish, milk, wine, bread coffee, sugar, tobacco, clothing, shoes, transport, training, medicine provided to farm workers and medical expenses paid on their behalf."

Electricity	66	78
Protective clothes and shoes	100	90
Transport	68	41
Doctors visits	42	39
Funerals	71	88
Child care	45	48
Grocery credit	39	41

Source: Conradie (2004)

5.4. CLOSURE

The objective of this chapter was to provide the situational context for the empirical analysis which will be presented in Chapter 6. This Chapter confirmed that while the Western Cape can be considered the most developed of South Africa's nine provinces, pockets of poverty can still be found. Farm workers living and working in the non-metropolitan areas of the province are a particularly vulnerable socio-economic group.

The current structure and performance of the Western Cape agricultural sector was also analysed and the key challenges confronting the sector were emphasised. The ability of the province to further expand its horticultural export sector was also highlighted, however it was emphasised that continued international market access is contingent on the sector being seen to adopt good labour practices and address farm worker development issues.

The final part of the chapter examined farm labour and remuneration trends. With respect to farm employment opportunities, in the long term it is unlikely that the agricultural sector will be a source of job creation. To the contrary, the Western Cape agricultural labour market is shrinking in relative terms and becoming increasingly casualised- permanent workers are being substituted by temporary and seasonal workers and there has been a shift towards the use of labour contractors. In the case of remuneration levels, it is unlikely that these will be dramatically increased in response to minimum wage legislation. These issues will be further explored in Chapter 6 which follows.

CHAPTER SIX
AN ASSESSMENT OF THE ABSOLUTE AND RELATIVE HUMAN DEVELOPMENT STATUS OF WESTERN CAPE FARM WORKERS: 1996-2001

6.1 INTRODUCTION

Chapter Four of this dissertation catalogued the methodological questions posed by the application of the human development approach. The need to reflect both horizontal and vertical "vagueness" was emphasised, where horizontal vagueness refers to the employment of a multi-dimensional poverty or development indicator set, while vertical vagueness relates to the transition from a state of deprivation to non-deprivation in a graduated way. The way in which the various empirical applications of the human development approach have dealt with these two issues was also explored. Chapter 4 was concluded with a presentation of the theory of fuzzy sets, stressing its applicability to human development analysis.

Chapter Five which followed from this was intended to provide the contextual background for the results presented here. Chapter Five showed that while the Western Cape is considered the most developed of South Africa's nine provinces, addressing poverty remains a formidable policy challenge, specifically in the non-metropolitan areas of the province. Numerous studies (e.g Sunde and Kleinbooi 1999; Vink *et al* 2001, Du Toit and Ally 2002; London 2003) have identified farm workers as a particularly vulnerable group. Since the early 1990s, the need to remedy this situation has been recognised and partly addressed by policy makers. As noted in the previous Chapter, the extension of the Basic Condition of Employment Act to include agricultural workers, the Extension of Tenure Security Act No 62, (1997) to all farm dwellers and the recent introduction of agricultural minimum wages, are examples of legislation aimed at improving the welfare of farm workers. This Chapter will establish whether this level of policy intervention has, or is likely to be, an adequate response to the farm worker poverty problem.

Broadly, the main objective of this chapter is to use the theoretical and methodological tools associated with the human development approach to gauge the absolute and relative development status of Western Cape farm workers for 1996-2001 period. This investigation

will clarify whether farm workers constitute a socially excluded group and whether additional policy intervention is needed to address their poor development status.

The more specific objectives of this Chapter are to:

- Identify a series of poverty functioning indicators that are appropriate and relevant to the measurement of the development status of Western Cape farm workers;
- Apply these indicators to compare the development status of farm workers with that of other economically active residents in the Province, and to detect any noticeable changes for the 1996-2001 period;
- Explore methodological issues related to the horizontal and vertical aggregation of the functioning indicators used in order to determine the sensitivity of the results to weighting specifications;
- Discuss the policy implications of the results with respect to Western Cape rural areas.

6.2 DATA SOURCES AND DISAGGREGATION METHODOLOGY

6.2.1 Data Sources

The analysis provided in this Chapter draws on information collected during the 1996 and 2001 South African Population Census (referred to in the text as Census 96 and Census 01 respectively). The 1996 Census was the first official post-1994 census, and thus the first to include all South Africans. The Census 96 questionnaire endeavored not only to record the number of people living in South Africa, but also to gather information on their life circumstances. A range of socio-economic questions covering areas such as education, housing conditions, fertility, income and employment were therefore included[40]. Statistics South Africa made a 10% sample of the individual Census 96 unit records available to the broader research fraternity. This data was accessed through the software package, Supercross, which permits self-designed cross tabulations to be drawn at low levels of data disaggregation.

The Census 01 methodology mirrored that of Census 96, with some refinements[41]. A 10% sample of the individual records was supplied to the author by Statistics South Africa. This data set was processed using the statistical package SPSS for Windows© (Version 11). Note

[40] For a detailed description of the Census 96 methodology see Statistics South Africa (1998).
[41] For a description of the Census 01 methodology see Statistics South Africa (2003).

that in most cases the information contained in both census data sets was organized in a categorical manner.

6.2.2 Disaggregation Methodology

As already specified, one of the key objectives of this study is to compare the absolute and relative development status of Western Cape farm workers to that of other Western Cape residents. To make such an exercise meaningful, this comparison was confined to those residents classified in Census 96 and Census 01 as being economically active. This "economically active" category was further disaggregated by employment status and geographic location.

For the purpose of this study, a "farm worker" or "agricultural sector worker" denotes a person, who works as a paid employee in the agricultural and hunting sector of the economy. The accent placed on work status (i.e. paid employee) was necessary to exclude employers (i.e. farmers) from the analysis which could introduce an upward bias in the results. The four groups that farm workers will be compared with were identified based on employment status, industry and location. These were defined as follows:

- **Workers in other sectors (metro):** This consists of all Western Cape employees, working in other sectors of the economy (i.e. not agriculture and hunting) and who resided in the Cape Town metropolitan area[42].
- **Workers in other sectors (non-metro):** This consists of all Western Cape employees, working in other sectors of the economy (i.e not agriculture and hunting) and who resided outside of the Cape Town Metropolitan Area.[43]
- **Unemployed (metro):** This consists of all Western Cape residents, who were classified in the Census 96 and Census 01 as being unemployed and who reside in the Cape Town Metropolitan area.[44]

---

[42] The Cape Town metropolitan area refers to the City of Cape Town Municipality which includes the magisterial districts of; Cape, Goodwood, Kuilsriver, Mitchell's Plain, Simonstown, Somerset West, Strand and Wynberg.

[43] "Outside of the Cape Town metropolitan area" refers to the following district municipalities: Boland District Municipality, Overberg District Municipality, West Coast District Municipality, Central Karoo District Municipality and Eden District Municipality

[44] Census 96 and Census 01 each used a slightly different official definition of unemployed. The International Labour Organisation (ILO) defines an unemployed person as an economically active individual who i) did not work during the seven days prior to the interview (i.e. census night), ii) wanted to work and were available to

- **Unemployed (non-metro):** This consists of all people who were classified in the Census 96 and Census 01 as being unemployed and who reside outside of the Cape Town Metropolitan area.

In the case of farm workers, their data was further disaggregated by gender in order to detect gender bias. The provincial totals were also disaggregated by gender to serve as a basis for comparison.

6.3 DEMOGRAPHIC FEATURES OF WESTERN CAPE FARM WORKERS

Table 6.1 below shows the number of individuals making up each of the reference groups described above, for 1996 and 2001 together with their percentage contribution to the total and growth rate for the period. As can be seen, from 1996-2001 the total number of farm workers employed in the province decreased by 8.11 % (137,059 vs 125,940). This decline is higher than the 3% decline experienced by other sectors in the Western Cape economy. Given the relatively high rate of formal job shedding for the Province as a whole, the marked increase in the absolute and relative size of the unemployed group is not surprising[45].

With respect to the intra-provincial distribution, 45% of farm workers were found in the Boland District Municipality - an area known for its high concentration of labour using deciduous fruit and wine grape production (Vink and Tregurtha 2003). As can be seen from Table 6.2, the remaining 55% of farm workers were evenly spread throughout the other districts, the notable exception being the semi-arid Central Karoo District.

---

start work within a week of the interview, and iii) had taken active steps to look for work or to start some form of self-employment in the four weeks prior to the interview. Statistics South Africa officially adopted the ILO definition of unemployment in 1998 after the Census 96 was conducted. In Census 96 an unemployed person was defined as a person who a) did not work seven days prior to the interview and b) wanted to work and was available to start work within four weeks after Census 96 was conducted. As can be seen Census 2001 employed a slightly stricter definition and thereby excluded the discouraged jobseeker segment - those who had not taken active steps to find work.

[45] This increase was in all likelihood higher than the 42% indicated here, given that Census 01 used a stricter definition of unemployment than the one used in Census 96.

Table 6.1: Number and Percentage of the Different Western Cape Labour Groups, 1996-2001

	1996		2001		Growth 1996-2001
	Number	%	Number	%	
Total	**1,338,034**	**100**	**1,427,650**	**100**	**6.70**
Male	718,642	53.71	743,270	52.06	3.43
Female	619,392	46.29	684,380	47.94	10.49
Agricultural Sector Workers (Farm Workers)	**137,059**	**10.24**	**125,940**	**8.82**	**-8.11**
Male	86,544	63.14	75,480	59.93	-12.78
Female	50,515	36.86	50,460	40.07	-0.11
Workers in other sectors	**899,334**	**67.21**	**871,810**	**61.07**	**-3.06**
Metro	*646,502*	*71.89*	*626,470*	*71.86*	*-3.10*
Male	349,429	54.05	325,940	52.03	-6.72
Female	297,073	45.95	300,530	47.97	1.16
Non-metro	*252,832*	*28.11*	*245,340*	*28.14*	*-2.96*
Male	143,066	56.59	131,600	53.64	-8.01
Female	109,766	43.41	113,740	46.36	3.62
Unemployed	**301,641**	**22.54**	**429,900**	**30.11**	**42.52**
Metro	*219,263*	*72.69*	*313,310*	*72.88*	*42.89*
Male	104,532	47.67	154,460	49.30	47.76
Female	114,731	52.33	158,850	50.70	38.45
Non-metro	*82,378*	*27.31*	*116,590*	*27.12*	*41.53*
Male	35,071	42.57	55,790	47.85	59.08
Female	47,307	57.43	60,800	52.15	28.52

Source: Census 96, Census 01

Table 6.2: Intra-provincial distribution by labour Group, 2001 (%)

	Farm Workers	Other: Metro	Other: Non-Metro	Unemployed: Metro	Unemployed Non-Metro	Total
City of Cape Town	9.57	100.00	0.00	100.00	0.00	66.67
Boland District Municipality	44.88		35.80		34.84	12.96
Overberg District Municipality	12.05		11.27		11.96	3.98
West Coast District Municipality	19.89		18.83		12.03	5.97
Central Karoo District Municipality	2.18		2.52		5.99	1.11
Eden District Municipality	11.44		31.58		35.19	9.31
	100.00	100.00	100.00	100.00	100.00	100.00

Source: Census 01

In terms of settlement-area type, while the majority of farm workers were found to be living on commercial farms and smallholdings (72%) in 1996 this percentage was considerably higher(83%

[46]. As explained in Chapter Five, this trend can be attributed to the growing number of farming businesses who are abjuring their housing function.

Table 6.3: Settlement Area Type by Labour Group, 2001

	Farm Workers	Other: Metro	Other: Non-Metro	Unemployed: Metro	Unemployed Non-Metro	Total
Farm and small holding	72.06	0.65	11.70	0.52	6.38	9.28
Urban Settlement	23.45	91.78	81.51	78.18	77.92	79.88
Informal Settlement	3.36	6.00	4.58	19.19	14.46	9.11
Other	1.13	1.58	2.20	2.11	1.24	1.74
	100	100	100	100	100	100

Source: Census 01

In Section 6.3 below, the key demographic features of these various labour groups will be examined by looking at the following variables; gender, age, racial composition, household size and structure and mobility.

6.3.1 Gender

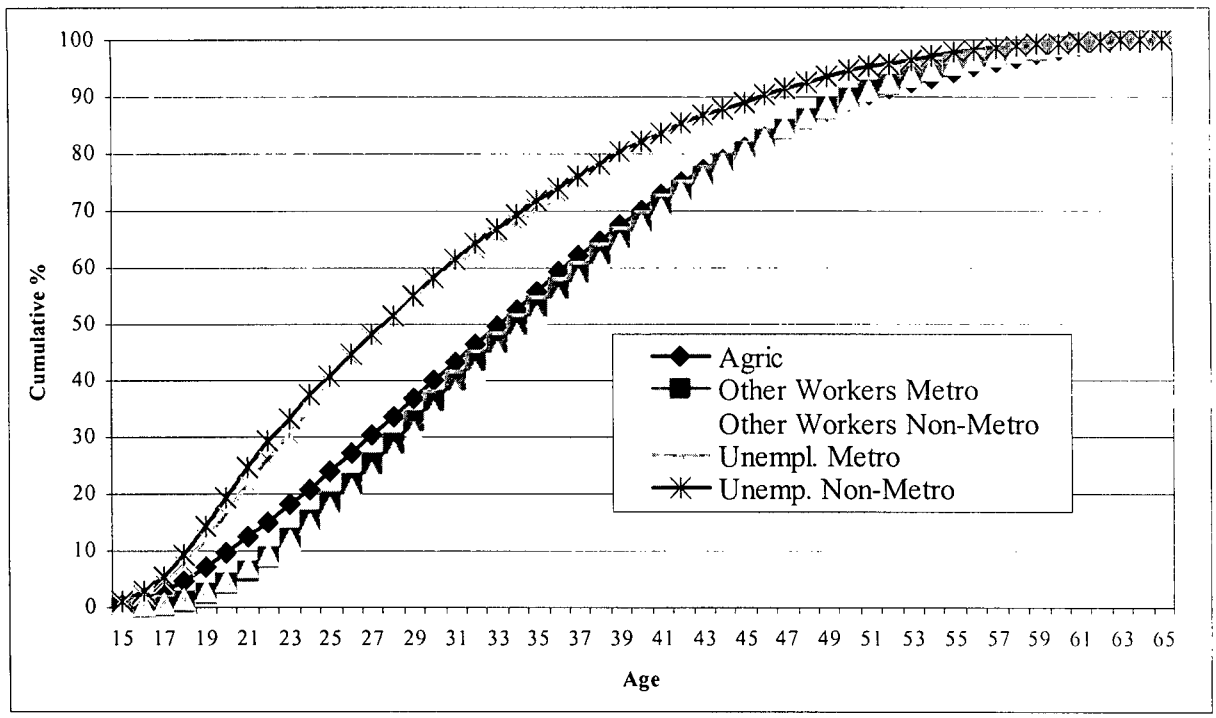
As can be seen from Table 6.1 above, 59.6% of all agricultural workers are male. This distribution illustrates a degree of male bias especially when compared to workers in other sectors of the Western Cape economy which exhibit more balanced gender ratios. These data also show that women in both metropolitan area and non-metropolitan areas bear a disproportionate share of the province's unemployment burden.

The growing feminization of the Province's agricultural labour force can also be seen in Table 6.1. This shift can be attributed to structural changes that have taken place within the Western Cape agricultural sector since the 1960s. The most important of these has been the absolute and relative increase in the size of the horticultural sector where women have traditionally been employed. Other contributing short-term factors include the extension of tenure rights to all farm dwellers in 1998. This has purportedly encouraged farmers to employ the female partners of existing male workers rather than increase the number of families with tenure rights to the farm (Sunde and Kleinbooi, 1999).

[46]This figure was extracted by Statistics South Africa on request.

6.3.2 Age

Farm workers as a group are marginally younger than workers in the rest of the economy. Figure 6.1 below shows this age distribution and it also shows how the youth are more likely to be among the unemployed in both the metropolitan and non-metropolitan areas of the province. Approximately 40% of those unemployed are in the 15-25 age cohort suggesting a high number of first-job seekers.



Source: Census 01

Figure 6.1: The Cumulative Age Distribution by Labour Group: 2001

6.3.3 Racial Composition

As can be seen from the Table 6.4 below, Western Cape farm workers are predominately Coloured. This bias is linked to the Province's racial make-up, forged by the "Coloured labour preference policy" (1954) that imposed influx controls on the African population, thereby limiting their settlement in the Western Cape. This legislation was repealed in 1985, resulting in the increased "Africanisation" of the Western Cape labour force. Table 6.2 below illustrates this trend for the 1996-2001 period. With respect to the agricultural sector, this demographic shift has not taken place. In 1996, 80% of all Western Cape farm workers were Coloured, 15% were African and 5% were White. Five years later these percentages remained unchanged.

Ewert *et al* (1998) attributes the low presences of African workers to the internal nature of the farm labour market where recruitment happens primarily through social networks of friends and relatives already employed on-farm. Other reasons cited include cultural and political factors. With respect to culture- the predominant language in the non-rural areas of the Western Cape is Afrikaans, hampering communication. Political reasons given include the perception on the part of farmers of friction between Coloured and African workers and the belief that the African workers are more militant.

Table 6.4: Racial Composition by Labour Group, 1996-2001

	Agric		Other Workers Metro		Other Workers Non-Metro		Unemployed Metro		Unemployed Non-metro		Total	
	1996	**2001**	**1996**	**2001**	**1996**	**2001**	**1996**	**2001**	**1996**	**2001**	**1996**	**2001**
African/Black	14.96	14.07	20.60	23.57	13.27	15.21	51.64	56.00	28.93	37.33	24.22	29.53
Coloured	79.68	79.93	51.50	52.26	63.99	63.78	42.80	40.46	66.37	58.96	56.33	54.64
Indian/Asian	0.09	0.16	1.19	1.40	0.12	0.31	0.63	0.56	0.08	0.14	0.71	0.81
White	5.27	5.84	26.71	22.77	22.62	20.69	4.94	2.99	4.62	3.58	18.74	15.01
Total	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**

Source: Census 2001

6.3.4 Household Size and Structure:

The average household size for farm workers is relatively small. The larger average household size of the unemployed in South Africa, 5.8 members, highlights the importance of family and community networks as a form of social security.

Table 6.5: Labour Group by Household Size, 2001

	Mean	Median	Mode
Agric Workers	4.69	4.00	4.00
Other Workers Metro	4.39	4.00	4.00
Other Workers Non-Metro	4.64	4.00	4.00
Unempl. Metro	5.18	5.00	4.00
Unemp. Non-Metro	5.48	5.00	4.00

Source: Census 01

When looking at the relationship of farm workers to the household head, more than 72% were either the head of the household or were the partner of the household head. Table 6.6 specifies this relationship. It is interesting to note the extent to which unemployed South Africans rely on their parental household for support.

Table 6.6: Household Structure, Relationship to Head of Household by Labour Group 2001

	Agric	Other (Metro)	Other (N-metro)	Unemp. (Metro)	Unemp. (N-metro)
Head of household	50.69	49.17	45.49	26.34	18.25
Husband/wife/partner	22.85	21.77	22.32	18.26	16.62
Son/daughter	14.68	17.54	19.77	32.94	43.38
Other family member	6.47	7.19	7.52	18.53	17.12
Non-related person	5.32	4.33	4.89	3.94	4.62

Source: Census 01

6.3.5 Migration

Table 6.7 below provides some indication of migration trends among Western Cape workers. The first point to note is that while 70% of all Western Cape workers were born in the Province, in the case of farm workers this percentage was considerably higher - 85%. Furthermore, with respect to the percentage of workers enumerated in the same geographical location for both the 1996 and 2001 censuses, the percentage for the Western Cape as a whole was 79%. In the case of farm workers and unemployed non-metro residents however, this percentage was higher namely 83% and 84%. This suggests a fairly stable non-metro population.

Table 6.7: Labour Group, province of Birth and enumeration location - 2001

	Born in the Western Cape			Born in other Province			Enumerated same location as 1996 (Total)
	Total %	Enumerated same location as 1996 %	Enumerated different location as 1996 %	Total %	Enumerated same location 1996 %	Other location 1996 %	
Agric Workers	85.08	73.48	11.6	14.92	9.68	5.24	83.16
Other Workers Metro	71.21	56.55	14.66	28.79	18.73	10.06	75.28
Other Workers Non-Metro	79.31	68.63	10.68	20.69	13.24	7.45	81.87
Unempl. Metro	53.85	46.79	7.06	46.15	31.81	14.34	78.6
Unemp. Non-Metro	71.41	64.83	6.58	28.59	19.61	8.98	84.4
Total	**70.02**	**58.68**	**11.34**	**29.98**	**19.94**	**10.04**	**78.62**

Source: Census 01

To summarise with respect to Western Cape farm workers, key distinguishing demographic features include– a gender bias toward males, a skewed racial composition favouring Coloured workers and a relatively high degree of geographic stability.

6.4 A DESCRIPTION OF THE BASIC INDICATORS

As noted in the Chapter 1, the South African Bill of Rights formalised the norms and values that underpin South Africa's democracy and vision of social justice. The provisions of this Bill can thus be used to establish an ideal list of functionings to take into account when conducting a wellbeing assessment of South African citizens. The Bill of Rights specifies functionings related to; political participation, labour relations, environmental safety and protection, housing, health, access to food, water, social security, education, language and cultural (social) expression (RSA 1996). While this list represents the "ideal", data availability dictated which of these functionings (and their proxies) eventually formed part of this study.

It must be noted that neither Census 96 nor Census 01 was designed to gather detailed information on wellbeing and quality of life issues. The empirical analysis which follows, while offering a robust assessment of Western Cape farm worker poverty levels, is partial at best and should thus be seen as an illustration of the methodological questions posed by the human development approach. Based on the information contained in the Census 96 and Census 01 databases, a number of development/poverty indicators were identified, and then classified into 7 broad categories: housing, household services, education, social relationships, health, labour/job situation and economic resources. Each of these categories, however limited, was taken as representing a particular functioning.

As previously indicated, the fuzzy sets approach will be applied to the data so as to capture the "vertical vagueness" of the poverty concept. With respect to the assignment of a membership function to each of these indicators, with the exception of three binary indicators (tenure, child mortality and disability status) these were specified using the Cheli and Lemmi formula. The advantage of this frequency-based specification is that it allows the membership function assigned to be based exclusively on empirical evidence and is particularly suited to categorical data.

$$\mu(x) = \begin{cases} 0 & \text{if } x = x;\ k=1 \\ \mu(x^{k-1}) + \dfrac{F(x^k) - F(x^{k-1})}{1 - F(x^1)} & \text{if } x = xk;\ k>1 \\ 1 & \text{if } x = xk,\ k = K \end{cases} \qquad \text{Equation 6.1}$$

In Equation 6.1 described here, k refers to the modalities/categories arranged in order of their associated risk of deprivation, while F (x^k) denotes the cumulative distribution of x ranked according to k. For each of the indicators described below, the two conditions will be specified that refer to poor and definitely not poor i.e. which of the modalities will be assigned 0 (k=1) and 1 (k=K). The ranking of the intermediate categories is also described. A collated summary of the indicators used in the analysis is presented in Table 6.8 which follows.

6.4.1. Housing Functioning

Information on housing is based on three variables. The *first* variable relates to housing type, with individuals living in informal dwellings (shacks) being considered deprived while individuals living in a house being considered non-deprived. The three intermediate housing type categories include i) traditional dwellings, ii) formal backyard and outbuilding structures and iii) a flat in a block of flats[47]. The *second* housing variable relates to housing density (crowding) and measures the average number of household members per room[48]. Deprivation corresponds with an average of more than four household members per room, while non-deprivation with and average less than or equal to 1. Intermediate categories include i) 3.01-4.00 people per room ii) 2.01-3.00 people per room and iv) 1.01-2.00 people per room. An inherent limitation of this indicator is that it does not account for surface area (room size) nor does it distinguish between the number of adults and the number of children per room.

The *third* housing variable relates to dwelling ownership and has been included, albeit somewhat vague, as an indicator of housing tenure security. In the analysis it is presented as a binary variable, with non-household home ownership being considered an indicator of deprivation, and household home ownership the converse.

[47] Both Klasen (2000) and Clarke and Qizilbash (2002) make use of a similar categorisation with respect to dwelling type.

[48] In the Census 01 questionnaire households were asked, "How many rooms including kitchens are there for this household?'' Respondents were asked to count all rooms, but exclude bathrooms, sheds, garages, stables, etc. unless there were people living in those rooms. This figure was divided into household size to arrive at a housing density figure.

6.4.2. Availability of Household Services Functioning

The availability in the home of the following household services has been included in the analysis; water, sanitation and energy (fuel) for cooking. With respect to *water,* an individual forming part of a household whose only access to water is via a dam, river, stream or spring (i.e. an unprotected water source) is considered deprived while a household with access to piped water inside the home as non-deprived. The intermediate categories include i) borehole, rainwater tank or well ii) public tap and iii) piped water on site. In the case of *sanitation*, the type of sanitation facilities available to a household was included. No access to a toilet was considered deprived while access to a flush or chemical toilet non-deprived. A bucket latrine and a pit latrine were considered to be the two intermediate categories. If a household's main source of *energy* for cooking was wood or animal dung they can be considered deprived, while households who use electricity are considered non-deprived. Intermediate categories include i) paraffin /coal and ii) gas[49].

6.4.3. Educational Functioning

The highest school class completed by an individual was taken as an indicator of their educational attainment (functioning). Brandolini and D'Alessio (1998) emphasise that defining educational deprivation is a complex issue given that educational attainments vary significantly across age groups. They go further to note that dramatic improvements in educational achievements over time has led to substantial educational differences across generations and thus a person's level of educational deprivation should not be judged in absolute terms, but rather relative to their age cohort. While this weakness has been highlighted, the data presented here has not been adjusted to reflect this. An individual with no education was considered deprived while an individual who had completed matric (Grade 12) was considered to be non-deprived. The intermediate categories include i) some primary education ii) completed primary and iii) some secondary education[50].

6.4.4 Social Relations Functioning

Neither Census 96 nor Census 01, collected detailed information on social relations. The only information vaguely related to social relations/interaction concerned telephone access. In this

[49] This household services categorisation partially mirrors that used by Klasen (2000).
[50] With reference to Figure 6.1, the implication of not accounting for age when it comes to educational attainment, is that it is likely to overstate the educational level of those unemployed vis-à-vis the other groups.

study, no access to a telephone will be seen as signalling relational difficulties (deprivation), with the availability of a telephone or cellular phone within the home taken as the non-deprivation condition. The two intermediate categories include i) access to a telephone not located nearby ii) access to a telephone located nearby.

6.4.5 Health Functioning

While neither Census 96 nor Census 01 included specific questions on health status, they did include information on mortality and disability status. This information has been used to fashion two health indicators. The *first* indicator relates to child mortality. All women who participated in Census 96 and Census 2001 were asked to specify the number of children ever born to them as well as to indicate which of these children were still alive. Childhood mortality is well accepted as a health indicator and is taken as being indicative of household health status. However, it is normally related to the age of the child at time of death (e.g. infant mortality) and measured as the number of deaths per 1000 births. Since the information on the age of the child at time of death was not gathered, it was not possible to calculate such a ratio. Instead, all woman aged between 15 and 55 who has lost 1 or more children were taken as being deprived, while all women aged between 15 and 55 whose children were all still living were considered non-deprived.

The *second* health indicator, relates to disability. An individual was considered deprived if they indicated the presence of a sight, hearing, communication, physical, intellectual or emotional disability that prevented their full participation in life activities such as education, work and social life.

Both these health indicators are somewhat questionable and poor. They have been included to emphasise the need for functioning corresponding to health. Furthermore the child mortality indicator only relates to a proportion of the women. This raises the question of how to treat functioning indicators that are not defined for all cases (in this case males).

6.4.6. Labour/ Job Situation Functioning

An individual's job situation has bearing on their well-being status. Employment is more than a means to an income, it signals social status and is an integral part of self-esteem. All those who were classified as unemployed were taken as being deprived while those employed in a professional and managerial capacity were taken as non-deprived. Intermediate job situation

categories include those employed performing i) elementary work, ii) artisans and operators iii) sales, clerical technical and semi-professional work.

6.4.7 Economic Resource Functioning

The inclusion of an economic resource functioning is somewhat contentions given that economic resources are viewed as a means to achieve certain functioning rather than being a functioning in its own right. Brandolini and D'Alessio (1998:32) defends its inclusion as part of a well-being assessment on the basis of the autonomous value of economic resources. They note that having economic resources *firstly* represent the important attribute of being able to live a comfortable life (being able to purchase durable goods and provide piece of mind). *Secondly* they note the economic resources are a measure of social status and *finally* they suggest the economic resources "reflect the 'easiness' with which a person may change his or her own condition". The following two economic resource indicators have been included namely individual monthly income and average household income per member. With respect to individual monthly income, those whose income was less than R400 per month were taken as being deprived while those whose income exceeded R 3200 per month were taken as non-deprived. The intermediate categories include i) R400-R800 ii) R 801-R1600 iii) R 1600- R3200. In the case of average household income per member, deprived individuals were taken as having an average household income of R200 per household member or less while non-deprived individuals were taken as those whose average household income per member exceeded R 1800 per person. The intermediate categories were as follows i) R 200-R400 ii) R 400- R800 ii) R 800-R1600[51].

It must be born in mind that two key assumptions underscore a number of the indicators described in this section. *First*, for information collected at a household level, intra-family distribution has been neglected and it is assumed that each household member achieves the same value as that assigned to the household. This is problematic when individuals are taken as the subject unit of analysis and intra-household distributional issues are ignored. *Second*,

[51] Household income data in Census 01 was only available by category. In order to average out household income by the number of household members, this data had to be converted from categories to absolute values. Persons claiming that they had no income were not adjusted, for the first class among those with incomes, the amount is R3 200 per annum (i.e. two-thirds of the top cut-off point of this bracket), for the second class, the amount is the midpoint of the class interval, for the last class, the bottom of the interval amount is R4 915 200. For all other classes, the amount is calculated as the logarithmic mean of the top and bottom of the given interval. This was the same methodology employed by Stats SA to derive household income levels on the basis of individual reported incomes.

the conversion from continuous to categorical variables and in some cases, from a large number of categories to a few, implies a specification of thresholds and intermediate values that are subjective and in some cases arbitrary. To mitigate this risk, conventions adopted by other South African studies that have attempted to operationalise the capability approach e.g. Klasen (2000), Qizilbash (2002) and Clarke and Qizilbash (2002), have been followed.

Table 6.8: Elementary indicators included in the functionings assessment

Functioning *(Short Name)*	**Indicator** *(Short Name)*	**Nature of indicator**	**Condition of deprivation**
1. Housing *(Housing)*	1.1. Dwelling Type *(Type)*	Categorical (1-5)	i) Informal dwelling ii) Traditional Dwelling iii) Formal backyard and outbuilding structures iv) Flat in block of flats v) House
	1.2 Number of people per room *(Density)*	Categorical (1-5)	i) ≥4 people per room ii) 3.01-4 people per room iii) 2.01-3.00 people per room iv)1.01-2.00 people per room v) ≤1 person per room
	1.3Dwelling Ownership *(Ownership)*	Binary	i) Non-ownership ii) Ownership
2. Housing Services *(Services)*	2.1. Type of Water Access *(Water)*	Categorical (1-5)	i) Dam/river/stream/spring ii) Borehole, rainwater tank or well iii) public tap and iv) Piped water on site v) Piped water in dwelling
	2.2. Sanitation Access *(Sanitation)*	Categorical (1-4)	i) No access to a toilet ii) Bucket latrine iii) Pit latrine iv) Flush or chemical toilet
	2.3. Energy Source for cooking *(Energy)*	Categorical (1-4)	i) Wood and dung ii) Paraffin /coal and iii) Gas iv) Electricity
3. Education *(Education)*	3.1 Highest school class completed *(Education)*	Categorical (1-5)	i) None ii) Some primary iii) Completed Primary iv) Some secondary v) Completed Secondary
4. Social Relations *(Social)*	4.1 Telephone Access *(Social)*	Categorical (1-4)	i) No access to telephone ii) Access to a telephone not located nearby iii) Access to a telephone located nearby iv)Access to telephone within dwelling
5. Health *(Health)*	5.1. Women aged 15-55 whose children were all still living *(Mortality)*	Binary	i) No ii) Yes
	5.2. Presence of 1 or more disability *(Disability)*	Binary	i) Yes ii) No
6. Labour Market *(Labour)*	6. 1 Job situation *(Job)*	Categorical (1-5)	i) Unemployed ii) elementary workers, iii) artisans and operators iv) sales, clerical technical and semi-professional workers v) professionals and managers
7.Economic Resources *(Economics)*	7.1. Individual Monthly Income *(Income)*	Categorical (1-5)	i) R0-R400 ii) R400-R800 iii) R 801-R1600 iv) R 1600- R3200 v) R3500+
	7.2 Average Household income per member *(HH Income)*	Categorical (1-5)	i) R 0-200 ii) 200-R400 iii) R 400- R800 iv) R 800-R1600 v) R1600

6.5 FUNCTIONING DEPRIVATION AMONG FARM WORKERS: A DESCRIPTIVE ANALYSIS BASED ON THE 2001 SOUTH AFRICAN CENSUS

For each of the variables described above, two sets of information are presented in Table 6.9 and 6.10. Table 6.9, provides a headcount estimation of poverty - that is to say the percentage of individuals in each of the groups who fell in the unambiguously poor category. The mean fuzzy score achieved by each of the groups is shown in Table 6.10. With respect to this score, higher values signal a higher degree of membership to the category "not poor". When it comes to interpretation, the emphasis should be on the relative and not the absolute standing of each of the groups.

Appendix 1a shows the skewness of the mean fuzzy scores for each of the groups. Skewness is a statistic that measures the shape and asymmetry of a distribution. A symmetrical distribution will have a skewness value of zero. An asymmetrical distribution with a long tail extending to the right (skewed to the right) will have a positive skewness value while a negative skewness value points to an asymmetric distribution with a long tail extending toward the left (skewed to the left). Finally Appendix 1b and 1c show the cross correlations for each of the variables and functionings discussed.

A number of the elementary indicators have been merged to generate a more composite image of the functioning they represent. The weighing structure used was derived from the Cerioli and Zani specification (discussed in Chapter 4):

$$W_i = - \ln [1/n \sum \mu_{ij}]$$

Table 6.10 shows the respective weight assigned to each of the indicators making up a particular functioning. These individual functioning fuzzy score's were further collapsed into a composite fuzzy index. At this point it is important to reiterate that there is a "..trade-off between synthesis and detailed knowledge... [F]or each subsequent set of the aggregation procedure some "piece of information" is invariably lost. This is particularly true for multidimensional analyses where dimensions of well-being that are qualifiedly and intrinsically distinct, are assessed. In this case, especially for the design of public action, more helpful and effective information can be derived from an articulated picture rather than a misleading index" (Chiappero Martinetti, 2000: 219).

Table 6.9: Headcount estimation of absolute poverty (%), 2001

Indicator		Type	Density	Ownership	Water	Sanitation	Energy	Education	Social	Mortality	Disability	Job	Income	H Income
Total		17.00	3.57	43.54	0.35	7.39	3.54	4.27	1.61	3.49	2.34	30.11	33.51	21.52
	Male	17.41	3.30	44.13	0.38	7.91	3.99	4.59	1.76	n.a	2.44	28.78	30.49	20.82
	Female	16.54	3.86	42.91	0.30	6.84	3.05	3.92	1.44	3.49	2.23	32.60	36.79	22.28
Agricultural Workers		6.71	4.10	80.17	2.13	14.48	20.10	11.70	4.72	6.50	2.67	0.00	15.22	14.00
	Male	6.54	3.51	81.24	2.24	15.82	22.32	13.20	5.19	n.a	2.87	0.00	10.65	14.48
	Female	6.96	4.97	78.56	1.96	12.49	16.79	9.47	4.00	6.50	2.36	0.00	22.06	13.28
Workers in other sectors		11.88	2.24	35.52	0.15	4.41	1.54	2.76	0.80	2.69	2.00	0.00	6.31	7.00
	Metro	12.45	1.78	33.67	0.08	4.16	0.60	2.28	0.70	2.40	1.80	0.00	5.03	6.11
	Non-metro	10.44	3.42	40.27	0.35	5.04	3.92	4.01	1.05	3.39	2.68	0.00	9.56	9.28
Unemployed		30.38	6.10	49.07	0.21	11.37	2.75	5.15	2.34	4.20	2.80	100.00	94.04	53.17
	Metro	32.87	5.69	49.66	0.08	11.27	1.34	5.14	2.41	4.20	2.54	100.00	94.09	52.98
	Non-metro	23.66	7.20	47.48	0.55	11.62	6.54	5.18	2.13	4.21	3.61	100.00	93.92	53.66

Source: Census 01

Table 6.10: Average Fuzzy Score, 2001

		Housing				Housing Services				Education	Social	Health			Job	Economic			Total
Weights		Type	Density	Ownership	Housing	Water	Sanitation	Energy	Services	Education	Social	*Mortality*	*Disability*	Health	Job	*Income*	*H Income*	Economic	F Score
Functioning Fuzzy Score Weight (Incl Health)					0.11				0.18	0.10	0.14			0.35	0.06			0.06	
Functioning Fuzzy Score Weight(Excl Health)					0.16				0.27	0.16	0.22			0.00	0.09			0.10	1.00
Indicator Functioning Weight		0.43	0.30	0.27	1.00	0.27	0.40	0.33	1.00	1.00	1.00	*0.47*	*0.53*	1.00	1.00	*0.44*	*0.56*	1.00	
Fuzzy Scores																			
Total		**0.727**	**0.598**	**0.565**	**0.644**	**0.744**	**0.872**	**0.815**	**0.819**	**0.633**	**0.747**	***0.965***	***0.977***	**0.971**	**0.444**	***0.417***	***0.493***	**0.459**	**0.676**
	Male	0.726	0.607	0.559	0.645	0.738	0.864	0.806	0.811	0.615	0.740		*0.976*	0.976	0.446	*0.447*	*0.497*	0.475	0.671
	Female	0.729	0.589	0.571	0.644	0.750	0.881	0.825	0.828	0.653	0.755	*0.965*	*0.978*	0.972	0.441	*0.385*	*0.488*	0.443	0.681
Agricultural Workers		**0.885**	**0.524**	**0.198**	**0.589**	**0.676**	**0.713**	**0.716**	**0.704**	**0.371**	**0.506**	***0.935***	***0.973***	**0.955**	**0.396**	***0.288***	***0.375***	**0.336**	**0.525**
	Male	0.886	0.558	0.188	0.597	0.667	0.690	0.693	0.685	0.365	0.505		*0.971*	0.971	0.407	*0.325*	*0.384*	0.358	0.523
	Female	0.884	0.473	0.214	0.578	0.689	0.746	0.751	0.733	0.380	0.507	*0.935*	*0.976*	0.957	0.379	*0.232*	*0.362*	0.304	0.528
Workers in other sectors		**0.768**	**0.677**	**0.645**	**0.707**	**0.814**	**0.923**	**0.889**	**0.883**	**0.708**	**0.835**	***0.973***	***0.980***	**0.976**	**0.675**	***0.630***	***0.648***	**0.640**	**0.773**
	Metro	0.748	0.696	0.663	0.709	0.830	0.929	0.901	0.893	0.733	0.860	*0.976*	*0.982*	0.979	0.697	*0.663*	*0.678*	0.671	0.791
	Non-metro	0.819	0.629	0.597	0.702	0.776	0.907	0.856	0.855	0.645	0.771	*0.966*	*0.973*	0.970	0.618	*0.546*	*0.573*	0.561	0.728
Unemployed		**0.599**	**0.461**	**0.509**	**0.533**	**0.620**	**0.817**	**0.695**	**0.724**	**0.558**	**0.641**	***0.958***	***0.972***	**0.965**	**0.000**	***0.024***	***0.212***	**0.129**	**0.523**
	Metro	0.566	0.468	0.503	0.519	0.625	0.811	0.697	0.724	0.569	0.656	*0.958*	*0.975*	0.967	0.000	*0.025*	*0.219*	0.133	0.526
	Non-metro	0.688	0.443	0.525	0.570	0.604	0.831	0.690	0.724	0.528	0.600	*0.958*	*0.964*	0.961	0.000	*0.021*	*0.194*	0.117	0.515

Source: Own calculation based on Census 01

6.5.1 Housing

In terms of housing quality (type), while 17% of all Western Cape workers were found to live in an informal dwelling or "shack", in the case of farm workers this figure was much lower - 7% translating into the highest comparative fuzzy score - 0.877. This high fuzzy score can be explained by the fact that most farm workers live on commercial farms in housing provided by their employers and this is also the reason why farm workers scored so poorly in dwelling ownership when compared to the other labour groups. With respect to density, farm workers fell in the intermediate category, scoring slightly higher than the metro and non-metro unemployed but falling below workers from other economic sectors.

The relatively low cross-correlations between the three housing indicators imply they capture different aspects of the housing dimensions – quality, quantity and certainty (sustainability). While farm workers scored the highest with respect to housing type, when the other two housing variables were brought into consideration their overall housing functioning achievement was relatively low.

Focusing on the gender gap, women farm workers scored marginally lower than their male counterparts when comparing average housing achievements. The results from a micro-level study conducted in 1999 that examined the living conditions of Western Cape women farm workers, point to a more complex reading. According to Sunde and Kleinbooi (1999), traditionally the provision of on-farm housing has been tied to the male workers' employment contact, even when both partners were employed. The majority of farmers interviewed for the Sunde and Kleinbooi (1999) study indicated that should a male worker leave the farm, the women worker would also have to leave with her partner. Furthermore, the accommodation provided to single women was reported to be inferior to that provided to families.

6.5.2 Housing services

Relatively few Western Cape workers fell in the unambiguously poor category in terms of access to water, sanitation and energy. While almost all workers in the Province boast access to a safe source of water, when looking at the fuzzy score achievement of this indicator, there is some way to go before all workers have access to piped water in their homes particularly in the case of farm workers and the unemployed.

Focussing on sanitation facilities, here farm workers scored particularly low. Slightly less than 15% of all farm workers reported no access to any type of sanitation facility. Furthermore their fuzzy score for sanitation was lower than that of both the unemployed and other workers from the non-agricultural sectors – 0.713 vs 0.817 and 0.923 respectively. Despite more than 20% of farm workers being classified as unambiguously poor in energy use, their fuzzy score was slightly higher than the unemployed given that a higher proportion of farm workers used electricity for cooking (ie were classified as "not poor", 70% versus 65%).

As can be seen from Table 6.10, the weighted averaging operator used to generate the housing services functioning, assigned the highest weight to the sanitation indicator. The poor score farm workers achieved in this dimension meant that on average farm workers were found to be the most deprived group in terms of the housing services functioning.

The high cross correlations between the three indicators suggest a degree of overlap between indicators (i.e. they measure the same thing) furthermore all three indicators were also correlated with the housing functioning. The overlap between the housing and household services functioning indicates that either one of these could be excluded without significantly impacting on the outcome of the results. However, this degree of correlation was not constant for all the groups and was much weaker in the case of farm workers. For this reason it can be argued they capture complementary aspects of wellbeing.

6.5.3 Education

Lack of education, is the biggest development challenge confronting farm workers. In 2001, more than 11% of all farm workers indicated they had no formal school education. Moreover farm worker fuzzy score for educational achievement was almost 50% lower than the score achieved by metropolitan workers employed elsewhere in the economy. Farm workers were also the only group whose education achievement was positively skewed.

As can be seen in Table 6.10, education attainment is also biased in favour of metropolitan residents and in particular those employed. It would be worth exploring the extent to which educational achievement facilitates labour mobility.

6.5.4 Social Relations

The same pattern observed for the household service functioning, was found to hold when it came to telephone access. In general, very few individuals (1.6%) were found to have no access to a telephone however this percentage was three times as high in the case of farm workers (4.7%). Farm worker's fuzzy score for this functioning was appreciably lower than all the other groups they were compared with. Given that the majority of farm workers live on commercial farms and are thus geographically separated from the broader community, their limited access to a telephone compounds their social isolation.

6.5.5 Health

In terms of the child mortality indicator, fewer than 4% of all Western Cape woman workers aged between 15-55, recorded that one or more of their children was no longer living. This percentage varied across the different groups. For farm workers, this percentage was the highest translating into the lowest fuzzy score followed by the unemployed. With respect to the disability indicator, differences between the groups were too small to detect any meaningful pattern. The high aggregate fuzzy score for health is not an indication of the positive health status of Western Cape residents. Rather, it points to the inappropriateness of the indicators used to reflect this functioning.

London (2003) reports that when it comes to farm workers, their exceptionally poor health status is well documented. For example, tuberculosis incidence rates for the Western Cape farming areas exceed 1,000 per 100,000 of the population, rates two to three times higher than those found in urban areas. Furthermore childhood stunting rates among farming communities were purportedly twice as high as national averages for urban children. Farm workers also face high occupational health risks such as pesticide poisoning, organic dusts and ergonomic and mechanical hazards. Work place injury rates reported among South African farm workers are higher than those in most other occupational sectors. Alcohol abuse is endemic among Western Cape farm workers, more than 60% of trauma cases presented at hospitals in the rural farming areas of the Western Cape are thought to be alcohol-related (London, 2003).

Indicators such as those described in the paragraph above would thus provide a more informative indication of health status than those derived from the Census 01 database. For this reason, the health functioning has been excluded from the composite fuzzy index and

will not form part of the results discussed below. As can be seen from Table 6.10 should it be retained, the weight assigned to this functioning would be 35%.

6.5.6 Labour/ Job Situation Functioning

The unemployed by virtue of their employment status were all considered absolutely poor, and thus their fuzzy score was 0. The low fuzzy score achieved by farm workers for this functioning is indicative of the unskilled nature of agricultural employment. Table 6.10 shows how the Cape Town metropolitan area boasts a higher concentration of skilled jobs compared with the non-metropolitan areas.

As can be expected, on average this functioning showed a very strong positive correlation with personal income (0.79), however in the case of farm workers this correlation was lower 0.52. The informational overlap between this functioning and the economic functioning will be further explored in Section 6.6 that follows.

6.5.7 Economic Functioning

Statistics South Africa (2003) warns users to treat all income variables derived from Census 01 with circumspection. Individuals were only asked to indicate which income bracket best described their gross monthly income. Informal income, enterprise profits or income in kind were not explored in detail and as a result, census income is thus understated for most of the population. Statistics South Africa (2003) claims the main reason they elected to release this variable was to illustrate patterns and trends, rather than precise estimates.

The unemployed by definition had no wage income, and as can be seen from Table 6.10 only a small proportion of this group had access to an alternative income stream. More that 15% of farm workers earned R100 per week or less in 2001 and their fuzzy score for personal income was roughly half of that earned by non-metropolitan workers employed in other sectors. Farm workers residing on commercial farms typically receive a significant percentage of their income in-kind (20%). This suggests that the income gap observed between farm workers and the other labour groups may be overstated.

The biggest component of in-kind payments farm workers receive is housing. If this benefit is normally tied to the male workers employment contract, then the gender income disparity between male and female farm workers may well be understated[52].

As can be seen from Table 6.10, the average household income per member variable helps equalise the distribution of economic resources across the groups. The unemployed still have the lowest fuzzy score followed by farm workers, other non-metro workers and finally the metro employed. Given that the average household income per member indicator is derived from the individual income variable, a high level of correlation between the two is predicted. However, both variables have been retained as part of the analysis as this correlation did not hold true for all of the groups.

6.6 AGGREGATIVE ANALYSIS OF THE ELEMENTARY FUNCTIONINGS

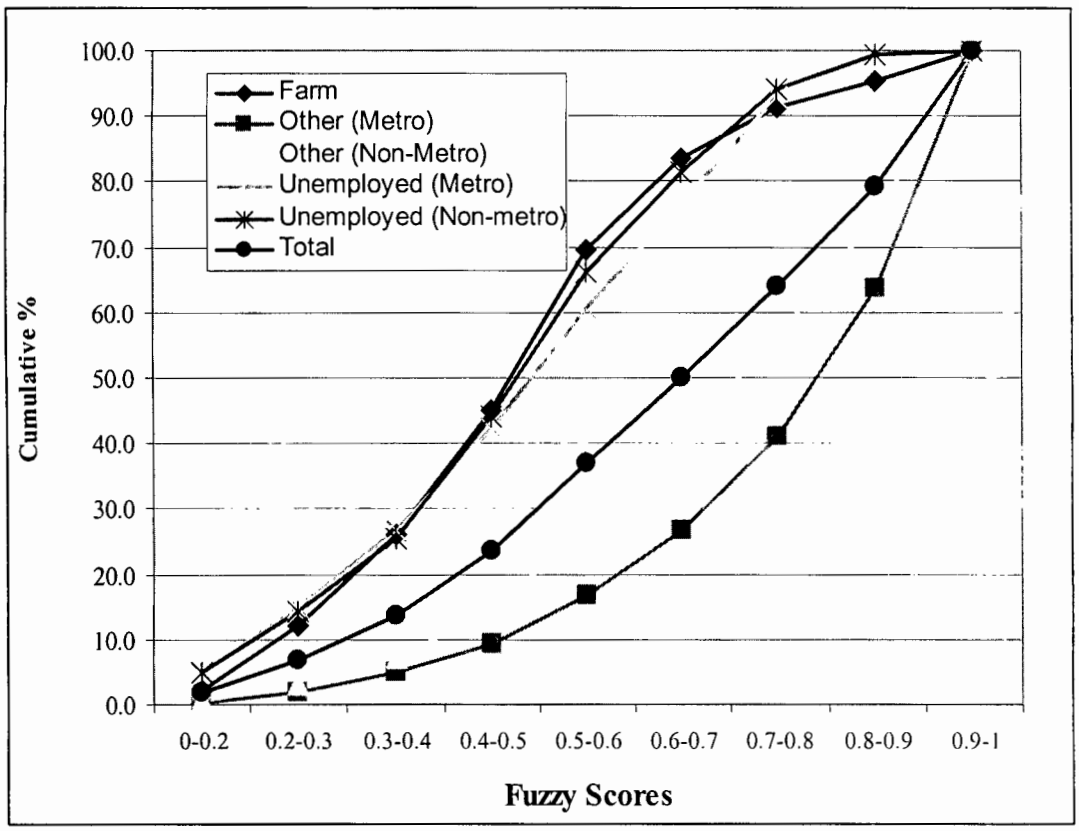
The last column of Table 6.10 shows the weighted composite fuzzy score (f-score) achieved by each of the respective groups. This value can be interpreted as a well-being index. As can be seen from Table 6.9, almost no difference could be detected in the score achieved by the non-metro unemployed (0.515), farm workers (0.523) and the non-metro unemployed (0.528). However, in the case of farm workers, their f-score was skewed to the right of this mean while a more symmetrical distribution was found for the unemployed.

Figure 6.2 below graphically illustrates the cumulative distribution of the composite fuzzy score for each of the groups discussed. As can be seen 50% of all farm worker's aggregate f-scores fell below 0.5, while for those workers employed in other sectors of the economy and who resided in the Cape Town metropolitan area this percentage was less than 10%.

As already noted, the composite fuzzy score is a weighted average of all the functionings (except health) discussed in Section 6.4. These weights were derived from a function that assigned higher weights to those functionings which were found to have higher fuzzy scores. Alternatively, an equal weight could be assigned to each of the functionings and their respective indicators. Table 6.11 shows how this affects the composite f-score value for each of the groups, and how this leads to a slightly different rank order. If an equal weight is

[52] No significant difference was recorded between male and female farm workers with respect to the number of hours worked. Census 01 found the median number worked per week for males and females was 45, while the mean for males was marginally higher than that of female workers (47.47 versus 45.74 hours per week).

assigned to each of the functionings, farm workers rank above both groups of the unemployed, however the difference between the f-scores remains small.



Source: Own calculation based on Census 01

Figure 6.2: Cumulative distribution of fuzzy scores, 2001

The calculation of a composite score is not needed to arrive at a rank order of the groups in terms of their level of human development. A Borda ranking methodology [53]can be applied at the functioning level, and the sum of these rank orders (known as the Borda score) can be used to arrive at a complete ordering between the groups (Qizilbash 2002). As can be seen from Table 6.11 no difference could be detected in the Borda Ranks of the either weighting methodologies, moreover the F-score ranking and the corresponding Borda rank were very similar to the equally weighted functioning methodology.

[53] The Borda method is commonly used in well-being assessments to arrive at a ranking classification. For each of the functionings examined, the worst performing group was assigned a value of one and the best a value of five. In the case of a tie, if there were two groups which had 1 group worse than them, they both got a rank order of 2 assigned to them. These rank orders were then summed to calculate their Borda score and the groups were then ranked on the basis of this.

In terms of gender, overall, women farm workers scored slightly higher than men; however, in terms of personal income they scored considerably lower than men. This difference could not be attributed to differences in the number of hours worked per week and confirms the findings of other studies that showed that women farm workers do not receive equal wages for equal work effort.

Table 6.11: Ranking by weighting methodology,2001

	Indicators and Functionings : Weighted (Cerioli and Zani)				Indicators and Functionings: Equally weighted			
	F.Score	F. Score Rank	Borda Score	Borda Rank	F Score	F Score Rank	Borda Score	Borda Rank
Agric	0.525	2	12	2	0.474	3	12	2
Other (Metro)	0.791	5	30	5	0.758	5	30	5
Other (Non-metro)	0.728	4	24	4	0.687	4	24	4
Unemployed (Metro)	0.526	3	12	3	0.428	2	13	3
Unemployed (non-metro)	0.515	1	10	1	0.416	1	10	1

Source: Own calculation based on Census 01

While there is almost no difference in the level of human development "enjoyed" by farm workers and the unemployed, a large difference was found between farm workers and other workers in the economy. It can be argued that this discrepancy is indicative of the high concentration of unskilled workers found in the agricultural sector. Table 6.12 stratified the data on functioning scores by occupation and as can be seen, when compared to other employed unskilled workers, farm workers still lag; howeve,r the aggregate f-score difference has now halved.

Table 6.12: Fuzzy scores, a comparison between occupation categories, 2001

		Housing	Service	Education	Social	Job	Economic	F. Score
Professionals	Agric	0.800	0.939	0.899	0.959	1.000	0.845	0.911
	Other (Metro)	0.847	0.971	0.933	0.979	1.000	0.910	0.943
	Other (N-Metro)	0.820	0.959	0.914	0.960	1.000	0.855	0.923
	Total	0.840	0.967	0.928	0.975	1.000	0.897	0.938
Sales, clerical, technical and semi-professional workers	Agric	0.720	0.900	0.747	0.839	0.873	0.662	0.807
	Other (Metro)	0.768	0.936	0.838	0.921	0.873	0.754	0.866
	Other (N-Metro)	0.777	0.924	0.833	0.889	0.873	0.695	0.851
	Total	0.770	0.933	0.836	0.912	0.873	0.738	0.862
Artisans, operators and skilled agricultural workers	Agric	0.598	0.739	0.401	0.585	0.538	0.383	0.576
	Other (Metro)	0.648	0.871	0.601	0.805	0.538	0.588	0.719
	Other (N-Metro)	0.667	0.828	0.558	0.736	0.538	0.527	0.683
	Total	0.648	0.847	0.571	0.767	0.538	0.553	0.696
Elementary Occupations	Agric	0.574	0.679	0.327	0.456	0.323	0.292	0.487
	Other (Metro)	0.568	0.784	0.536	0.719	0.323	0.442	0.619
	Other (N-Metro)	0.620	0.781	0.449	0.629	0.323	0.376	0.587
	Total	0.584	0.752	0.449	0.615	0.323	0.378	0.570

Source: Own calculation based on Census 01

Finally, Table 6.13 compares the f-scores of farm workers to those of other workers in low wage industries, namely those i)employed in the forestry and fishing industry and ii) those employed by private households (domestic workers). Workers employed in the forestry and fishing industry were found to have a higher development status than farm workers while the difference between farm workers and domestic workers was found to be relatively small.

Table 6.13: Fuzzy Scores, a comparison between workers from different low wage industries, 2001

	Housing	Service	Education	Social	Job	Economic	F. Score
Agriculture	0.589	0.704	0.371	0.506	0.396	0.336	0.525
Forestry and Fishing	0.634	0.814	0.555	0.752	0.517	0.525	0.674
Domestic Workers	0.570	0.744	0.445	0.664	0.350	0.342	0.574

Source: Own calculation based on Census 01

In conclusion, the results of the analysis presented here attest to the value of using a multi-dimensional wellbeing/poverty measurement metric. Furthermore, this analysis demonstrated how the theory of fuzzy sets can be used to empirically measure wellbeing, poverty and development in terms of capabilities and functionings. If a fuzzy score can be thought of as a

number between 0 and 1 that measures the truth of the statement "farm workers enjoy a high level of development", based on the results presented here, the simple response to this statement is "not true".

6.7. FUNCTIONING DEPRIVATION AMONG FARM WORKERS: 1996-2001

As discussed in Chapter 5, since 1994 South African farm workers have benefited from a range of labour protection legislation and it can be assumed that this has had a positive impact on their development status. This assumption will be verified by using the same methodology described in Section 6.4 and applying it to the 1996 South African Population Census data.

The indicators used to reflect the various functionings and the conditions of deprivation are identical to those described in Table 6.4 with the exception of the economic functioning indicators. Here, personal and per capita household income are still used as indicators however, given that Census 01 used different income ranges than Census 96, the following adjustments were made. With respect to individual monthly income, those whose income is ≤ R200 per month were taken as being deprived while those whose income exceeded R 2500 per month were taken as non-deprived. The intermediate categories include i) R201-R500 ii) R 501-R1000 iii) R 1001- R2500. In the case of average household income per member, deprived individuals were taken as having an average household income of a R100 per household member or less while non-deprived individuals were taken as those whose average household income per member exceeded R 1250 per person. The intermediate categories were as follows i) R 100-R250 ii) R 250- R500 ii) R 500-R1250[54].

Table 6.14 shows the fuzzy scores achieved by the various labour groups in 1996. Note the 1996 and 2001 fuzzy scores (shown in Table 6.10) are not directly comparable since each set is based on the frequency distribution of the specified indicator for that particular year – the emphasis is on relative achievement. As can be seen from Table 6.14, in 1996 Western Cape

[54] As was the case with Census 01, Census 96 household income data was only available by category. In order to average out household income by the number of household members, this data had to be converted from categories to absolute values. Persons claiming that they had no income were not adjusted, for the first class among those with incomes, the amount was two-thirds of the top cut-off point of this bracket, for the second class, the amount is the midpoint of the class interval. For all other classes, the amount is calculated as the logarithmic mean of the top and bottom of the given interval.

farm worker's scored considerably lower than all other labour groups in terms of housing, housing services, education and social functionings.

Table 6.15 compares the fuzzy score rank per functioning achieved by the various labour groups for 1996 and 2001. As can be seen in terms of the housing and housing services functionings, from 1996-2001 farm workers were able to improve their relative position vis-à-vis the other labour groups. In 1996 farm workers composite f-score was the lowest of all groups reviewed while in 2001, farm workers ranked above the non-metro unemployed.

Table 6.14: Average Fuzzy Score, 1996 versus 2001

		Type			Density			Ownership			Housing		
		1996	2001 (base 96)	% change	1996	2001 (base 96)	% change	1996	2001 (base 96)	% change	1996	2001 (base 96)	% change
Functioning Fuzzy Score Weight											0.18	0.18	
Indicator Functioning Weight		0.35	0.35		0.32	0.35		0.33	0.33				
Total		0.706	0.745	5.46	0.682	0.662	-2.94	0.689	0.565	-18.06	0.693	0.658	-4.94
	Male	0.705	0.743	5.37	0.687	0.672	-2.24	0.680	0.559	-17.83	0.691	0.659	-4.62
	Female	0.708	0.746	5.43	0.675	0.651	-3.49	0.699	0.571	-18.32	0.694	0.658	-5.27
Agricultural Workers		0.850	0.894	5.19	0.609	0.598	-1.75	0.171	0.198	15.99	0.548	0.569	3.80
	Male	0.846	0.895	5.76	0.632	0.630	-0.36	0.161	0.188	16.52	0.551	0.575	4.52
	Female	0.857	0.893	4.22	0.568	0.551	-2.93	0.189	0.214	13.45	0.543	0.558	2.86
Workers in other sectors		0.739	0.788	6.67	0.742	0.734	-1.02	0.733	0.645	-12.04	0.738	0.723	-1.97
	Metro	0.724	0.771	6.48	0.767	0.753	-1.79	0.758	0.663	-12.49	0.749	0.730	-2.60
	Non-metro	0.777	0.833	7.16	0.677	0.686	1.38	0.669	0.597	-10.71	0.709	0.708	-0.20
Unemployed		0.544	0.612	12.53	0.537	0.534	-0.62	0.792	0.509	-35.69	0.624	0.553	-11.36
	Metro	0.495	0.582	17.51	0.557	0.542	-2.69	0.798	0.503	-36.92	0.615	0.543	-11.73
	Non-metro	0.673	0.694	3.13	0.483	0.511	5.85	0.776	0.525	-32.32	0.645	0.579	-10.28

Source: Own calculation based on Census 01 and Census 96

Table 6.14: Average Fuzzy Score, 1996 versus 2001 (cont.)

		Water			Sanitation			Energy			Housing Services		
		1996	2001 (base 96)	% change	1996	2001 (base 96)	% change	1996	2001 (base 96)	% change	1996	2001 (base 96)	% change
Functioning Fuzzy Score Weight											0.26	0.26	
Indicator Functioning Weight		0.31	0.31		0.38	0,38		0.30	0.30				
Total		0.792	0.720	-9.13	0.856	0.873	2.02	0.785	0.815	3.81	0.814	0.808	-0.83
	Male	0.780	0.714	-8.47	0.845	0.865	2.38	0.769	0.806	4.80	0.802	0.800	-0.20
	Female	0.807	0.726	-10.04	0.870	0.882	1.41	0.803	0.825	2.71	0.830	0.816	-1.67
Agricultural Workers		0.617	0.646	4.70	0.593	0.717	20.95	0.565	0.716	26.78	0.592	0.695	17.37
	Male	0.599	0.637	6.30	0.573	0.695	21.32	0.542	0.693	27.84	0.572	0.676	18.30
	Female	0.647	0.660	1.99	0.628	0.750	19.47	0.604	0.751	24.39	0.627	0.722	15.30
Workers in other sectors		0.857	0.797	-7.03	0.915	0.923	0.92	0.861	0.889	3.21	0.880	0.873	-0.81
	Metro	0.883	0.814	-7.84	0.933	0.929	-0.40	0.885	0.901	1.83	0.903	0.885	-2.00
	Non-metro	0.793	0.753	-5.04	0.869	0.908	4.54	0.797	0.857	7.48	0.823	0.844	2.54
Unemployed		0.672	0.585	-12.94	0.800	0.818	2.19	0.660	0.694	5.20	0.718	0.708	-1.38
	Metro	0.678	0.592	-12.69	0.798	0.812	1.77	0.662	0.696	5.13	0.719	0.708	-1.53
	Non-metro	0.670	0.566	-15.45	0.806	0.832	3.24	0.652	0.690	5.80	0.717	0.706	-1.49

Table 6.14: Average Fuzzy Score, 1996 versus 2001 (cont.)

		Education			Social			Job			Income		
		1996	2001 (base 96)	% change	1996	2001 (base 96)	% change	1996	2001 (base 96)	% change	1996	2001 (base 96)	% change
Functioning Fuzzy Score Weight		0.15	0.15		0.17	0.17		0.11	0.11				
Indicator Functioning Weight											0.45	0.45	
Total		0.619	0.653	5.55	0.672	0.787	17.15	0.489	0.442	-9.55	0.495	0.392	-20.72
	Male	0.599	0.636	6.14	0.660	0.781	18.38	0.482	0.447	-7.20	0.539	0.422	-21.71
	Female	0.643	0.672	4.59	0.687	0.794	15.53	0.491	0.437	-11.02	0.442	0.360	-18.48
Agricultural Workers		0.314	0.393	25.07	0.492	0.585	18.84	0.390	0.405	3.85	0.288	0.245	-14.99
	Male	0.314	0.386	22.94	0.492	0.583	18.53	0.398	0.417	4.72	0.329	0.278	-15.61
	Female	0.316	0.403	27.44	0.492	0.587	19.29	0.378	0.387	2.48	0.219	0.196	-10.62
Workers in other sectors		0.692	0.726	4.95	0.744	0.861	15.67	0.672	0.671	-0.12	0.668	0.597	-10.64
	Metro	0.718	0.751	4.56	0.777	0.882	13.50	0.691	0.693	0.24	0.702	0.632	-10.00
	Non-metro	0.626	0.664	6.02	0.658	0.808	22.78	0.624	0.617	-1.20	0.583	0.508	-12.87
Unemployed		0.542	0.582	7.37	0.541	0.697	28.82	0.000	0.000	0.00	0.028	0.021	-24.37
	Metro	0.549	0.593	8.04	0.549	0.709	29.19	0.000	0.000	0.00	0.028	0.022	-21.28
	Non-metro	0.522	0.552	5.71	0.519	0.664	27.88	0.000	0.000	0.00	0.025	0.018	-28.57

Table 6.14: Average Fuzzy Score, 1996 versus 2001 (cont.)

		Household Income			Economic			Fuzzy Score		
		1996	2001 (base 96)	% change	1996	2001 (base 96)	% change	1996	2001 (base 96)	% change
Functioning Fuzzy Score Weight					0.12	0.12		100	100	
Indicator Functioning Weight		0.55	0.55							
Total		0.565	0.520	-7.96	0.533	0.462	-13.31	0.618	0.627	1.42
	Male	0.567	0.524	-7.64	0.554	0.478	-13.82	0.612	0.623	1.84
	Female	0.562	0.516	-8.17	0.508	0.446	-12.22	0.626	0.631	0.84
Agricultural Workers		0.396	0.415	4.84	0.347	0.338	-2.58	0.433	0.491	13.42
	Male	0.410	0.423	3.25	0.373	0.358	-4.25	0.431	0.488	13.27
	Female	0.374	0.403	7.74	0.304	0.309	1.77	0.436	0.495	13.43
Workers in other sectors		0.685	0.671	-2.00	0.677	0.638	-5.84	0.685	0.701	2.38
	Metro	0.716	0.699	-2.35	0.710	0.669	-5.77	0.706	0.716	1.42
	Non-metro	0.610	0.595	-2.52	0.598	0.556	-7.08	0.630	0.662	5.10
Unemployed		0.293	0.244	-16.76	0.173	0.143	-17.31	0.502	0.516	2.79
	Metro	0.296	0.249	-15.80	0.175	0.147	-16.19	0.504	0.519	2.99
	Non-metro	0.285	0.230	-19.47	0.168	0.134	-20.09	0.498	0.509	2.14

Table 6.15: Poverty Rank, 1996 and 2001 (1=most poor)

	Housing	Services	Education	Social	Job	Economic	F-score
Agric							
1996	1	1	1	1	3	3	1
2001	3	1	1	1	3	3	2
Other Worker (metro)							
1996	5	5	5	5	5	5	5
2001	5	5	5	5	5	5	5
Other Worker (non-metro)							
1996	4	4	4	4	4	4	4
2001	4	4	4	4	4	4	4
Unemployed							
1996	3	3	3	3	1	2	3
2001	1	2	3	3	1	2	3
Unemployed (non-metro)							
1996	2	2	2	2	1	1	2
2001	2	2	2	2	1	1	1

Source: Own calculation based on Census 01 and Census 96

As was discussed in Chapter 5, there are two main approaches that can be followed when estimating a fuzzy membership function namely distance and frequency. The results generated thus far (with the exception of the 2 binary indicators) were all based on a Cheli Lemmi frequency-based membership function specification (Equation 6.1). However, if the various Cheli and Lemmi membership functions derived from the 1996 data were imposed on the 2001 data (ie use 1996 as the base), they would be converted into a pre-defined distance-based membership function. Furthermore, if the same indicator and functioning weights were also used, the results from 1996 could be compared with those of 2001. Table 6.14 shows the application of these adjustments[55].

The percentage change in the level of wellbeing experienced by Western Cape workers from 1996 to 2001 is also shown in Table 6.14. As can be seen, the overall f-score (wellbeing index) for 2001 was 1.5% higher than the 1996 score. In the case of farm workers, they experienced the largest positive increase in development status – 14.2%, with the education (25%), housing services (17%) and social relations functionings (19%) increasing the fastest in both absolute and relative terms. It can thus be concluded that while the development status of farm workers is low, a number of important gains were made during the 1996-2001 period.

[55] Note in order to compare economic functionings data, the 2001 personal income was converted from a category to single value and was then deflated to 1996 prices and then re-sorted according to 1996 categories. There is a risk that this conversion process may have contaminated the data and consequently the results.

In terms of the economic functioning, numerous data transformations were implemented in order to make the 1996 data comparable with that of 2001. This process may have interfered with the integrity of the data and thus the research findings related to this functioning. The decline in real economic circumstances from 1996-2001 shown by this research should thus be treated with caution and consequently the change on overall fuzzy score for the 1996-2001 period.

6.8 POLICY IMPLICATIONS OF THE RESULTS: AN OVERVIEW

The primary rationale for undertaking this research theme was to systematically assess the development status of farm workers and build the case for policy intervention aimed at addressing the plight of the working poor. The introduction of agricultural minimum wages, has no doubt improved the wellbeing of farm workers, however on its own it is unlikely to eliminate the development gap between farm workers and other Western Cape workers. This point was acknowledged in a background report prepared in support of the introduction of minimum wages which stated that if minimum wages are to realise their stated objectives, namely the reduction of inequality, other programmes aimed at rural upliftment must accompany their introduction (Vink *et al.*, 2001).

Examples given by Vink *et al* (2001:3) of such programmes include:

- a revised *land reform programme* which strives to be flexible, demand driven and decentralized - better able to accommodate the needs of new commercial farmers.
- Implementation of *local economic development (LED) initiatives* as part of the integrated development planning responsibilities of the newly-constituted municipalities in the third sphere of government in South Africa
- programmes to ensure *access to rural financial services* for small and emerging commercial activities throughout the agricultural supply chain. The key institution in this regard is the refocused Land Bank. Instruments such as the Step-up programme, the 'Land Bank Social Discount Product' and conventional Land Bank participation in the financing of farmers, cooperatives, etc
- the *export promotion programmes* of the Department of Trade and Industry, partly administered by the Industrial Development Corporation. This includes financial assistance for export market development (e.g. financial support to visit potential markets and to design and produce promotional material, etc.) and project finance at concessionary terms for the expansion of exportable production from the IDC

- *health policies*, which are aimed at redressing the imbalance between preventative and curative health services delivery and improving access to health services, especially for the rural poor
- social policies, including welfare, housing, youth, gender, recreation, adult literacy etc

The impact of such programmes on the wellbeing of farm workers hinges on the extent to which these broad generic programmes can be targeted at specific communities and geographical areas. Disaggregating the farm worker data by demographic and location characteristics can assist in this process. Table 6.16 for example shows that farm workers living off-farm enjoy a higher standard of living than those living on-farm provided they reside in a formal settlement. Given the trend towards the off-farm housing of workers, rural local authorities with the highest concentration of farm workers such as the Boland District Municipality will have to ensure adequate infrastructure is in place to accommodate this shift.

Table 6.16: Farm worker fuzzy scores by place of residence, 2001

	Housing	Service	Education	Social	Job	Economic	F. Score
Farm and small holding	0.616	0.677	0.323	0.464	0.378	0.315	0.496
Urban Settlement	0.657	0.849	0.512	0.639	0.451	0.416	0.638
Informal Settlement	0.295	0.303	0.387	0.463	0.392	0.256	0.346
Other	0.582	0.653	0.442	0.542	0.409	0.317	0.526

Similarly, on the basis of the poor economics functioning achieved by farm workers residing in the Central Karoo and Eden District Municipality areas, these should be made priority LED areas. Furthermore these areas should also be targeted by the Department of Labour to ensure compliance with minimum wage legislation.

Table 6.17: Farm worker fuzzy scores by location, 2001

	Housing	**Service**	**Education**	**Social**	**Job**	**Economic**	**F. Score**
City of Cape Town	0.602	0.740	0.515	0.659	0.498	0.471	0.612
Boland DM	0.598	0.750	0.359	0.499	0.383	0.325	0.529
Overberg DM	0.619	0.764	0.380	0.567	0.396	0.354	0.557
West Coast DM	0.640	0.711	0.347	0.442	0.374	0.322	0.510
Central Karoo DM	0.651	0.380	0.285	0.382	0.410	0.257	0.397
Eden DM	0.633	0.479	0.349	0.475	0.399	0.291	0.453

6.9. CLOSURE

This chapter demonstrated how Sen's capability approach can be operationalised through the application of the theory of fuzzy sets to empirically measure the level of wellbeing enjoyed by Western Cape farm workers. Despite using a second-best data set, the poverty functioning indicators used to carry out this analysis can be considered appropriate and relevant with the exception of the health status indicators which were subsequently omitted from the analysis. Furthermore, given that the personal and household income data used was only available by category, a number of adjustments had to be made to arrive at an absolute value. This may have compromised the integrity of the data.

If the development status of farm workers is compared with that of other economically active residents in the province, they scored very low. This result was shown to be relatively insensitive to weighing specification. Furthermore even when the sector's abnormally high concentration of unskilled workers is taken into consideration, it is clear that farm workers constitute a socially excluded group. However, in terms of progress made since 1996, the development levels of farm workers were shown to have increased at a faster rate than all other labour groups. It is anticipated that this rate of progress may have accelerated since 2003 as the impact of minimum wage legislation filters through to farm workers, especially those at the bottom of the wage hierarchy.

Finally, the one innovative aspect of this study that should be highlighted is the methodology followed in using the fuzzy theory approach to measure absolute changes in wellbeing over time. This was achieved by first calculating a frequency based membership function for the base year (1996), and then applying this function to subsequent data sets (2001) in much the same way as you would apply a distance based membership function, the 1996 indicator and functioning weights were also used for 2001.

CHAPTER SEVEN

SUMMARY AND CONCLUSIONS

Are Western Cape farm workers poor? The research question this dissertation set out to examine was deceptively simple – before poverty (or its corollary development) can be measured it must be defined. The first part of this dissertation therefore focused on delineating the concepts of poverty, wellbeing and development while the latter part concentrated on resolving and applying measurement techniques to empirically answer the research question.

As was discussed in Chapter Two, a key element of any development approach or theory is a measurement yardstick by which to assess whether an individual, community or country is progressing towards the goal of being developed. It is an indication of the extent to which the goal of "being developed" or "escaping deprivation" is being realized. Thus if you choose to measure development in terms of a money metric such as per capita income, you implicitly assume that development is about the possession of commodities and economic growth. This view is consistent with the neo-classical approach to development which was generally accepted by the development fraternity until the early 1980s.

The human development approach in contrast, views development in terms of capabilities and functionings. Based on the work of Amartya Sen, this approach rejects the notion that poverty is about having too little money, rather it is about living a life devoid of economic, social and political choices or freedoms. These freedoms Sen labels capabilities and they are derived from functioning choices. A functioning represents different aspects of the state of a person, and can either be an activity such as working or a state of existence such as being educated. A functioning is an achievement whereas a capability is the possible options or choices open to a person. As was explained in Chapter Three, it is on the basis of a person's capability set that an evaluation of their level of wellbeing is possible. The human development approach therefore measures development in terms of capabilities.

While this view of development is conceptually appealing, it is relatively difficult to practically apply. The theory of human development does not specify which capabilities to include when measuring poverty or wellbeing, in addition it provides no method to rank capabilities. Capabilities can simultaneously expand in some areas while contract in others. Because there is no method of ranking capabilities, it is impossible to conclude whether on balance, development has taken place. Finally, on a practical level the data requirements to measure wellbeing in a multivariate way are significant and are more often than not based on detailed household socio-economic surveys that are not easily replicated over time. For these reasons, while development economists endorse the theory of human development on an ideological and strategic level, methodologically there is still a tendency to measure it in terms of income levels.

While the mainstream development fraternity has shied away from confronting this measurement challenge, a number of empirical applications of the human development approach have emerged in recent years. A cross-section of these studies was described catalogued in Chapter Four. Chapter Four also detailed the main methodological issues that have to be confronted when operationalising the human development approach. These include: the selection of an adequate evaluation space (capabilities versus functioning), the specification of a list of relevant functionings, the identification of appropriate indicators and measurement criteria, and finally the selection of an aggregation/ weighting technique to obtain a composite overall wellbeing measure.

Chapter Five provided background on the structure and performance of the Western Cape agricultural sector while Chapter Six, using data from the 1996 and 2001 population census, measured the wellbeing of farm workers in terms of their level of human development. With respect to resolving the methodological challenges posed by the human development approach, the following principles were adopted in this dissertation and applied in Chapter Six:

- **Selection of the adequate evaluative space - capabilities versus achieved functionings:** When measuring capabilities not only do you have to take into account a person's actual functioning achievement but also the range of possible alternatives they face. However, due to the impracticality of measuring this, it has been suggested that empirical applications of the capability approach confine themselves to the space

of achieved functionings on the condition that it is recognised that this represents but an elementary evaluation of the capability set. Thus, in assessing poverty levels among farm workers, only their levels of achieved functionings were examined.

- **Defining a list of (essential, relevant) functionings:** The Bill of Rights formalised the norms and values that underpin South Africa's democracy and vision of social justice. The provisions of this Bill can thus be used to establish an ideal list of functionings to take into account when conducting a wellbeing assessment of South African citizens. The Bill of Rights specifies functionings related to; political participation, labour relations, environmental safety and protection, housing, health, access to food, water, social security, education, language and cultural (social) expression. However, this list represents the "ideal", data availability dictated that only a limited number of these functionings (and their proxies) eventually formed part of the evaluation. These included: housing, housing services, education, social relations, health, employment and economic functionings.

- **Selecting a set of indicators related to these dimensions and identifying adequate criteria to measure and reflect these.** Once the relevant functionings had been selected, the indictor(s) used to measure a functioning were identified. Data availability governed this process. In the case of the health functioning, the indicators available were so poor they had to be rejected and consequently the health functioning was eliminated from the evaluation. With respect to identifying criteria to measure and reflect these indicators, the theory of fuzzy sets was adopted. Chapter Six described the advantages of using such an approach when dealing with vague concepts – where the boundary between being considered "poor" and "not poor" in terms of a particular functioning is not precise. Furthermore, a Chelli and Lemmi frequency-based membership function was used to specify the transition from being "poor" to "not poor". This type of specification can be thought of as a relativist measure of deprivation since it relates to "how many people are worse off than one is in the ambiguous region between definite poverty and non-poverty" (Qizilbash, 2001:19). Furthermore, the wellbeing assessment presented in Chapter Six disaggregated the data by worker group in order to get a sense of the relative deprivation of farm workers vis-à-vis other labour groups these included: non-agricultural workers and the unemployed residing in the metropolitan area of Cape

Town as well as non-agricultural workers and the unemployed residing in the non-metropolitan areas of the province.

- **Aggregation Issues**: With respect to aggregation, in order to move from individual indicators to the space of functionings and from functionings to a composite wellbeing indicator, a Cerioli and Zani frequency based weighing structure was used. Frequency based weighting systems "let the data speak for themselves" with weights being calculated by examining the relative frequency of an attribute. The lower the proportion of people in a society deprived of a certain indicator or functioning, the higher the weight assigned to that attribute. This is premised on the view that there is "some kind of relief induced by the sharing of a negative experience with others" (Lelli, 2001:10).

Once the methodological issues had been resolved, the bulk of Chapter Six was concerned with measuring the absolute and relative development status of Western Cape farm workers. The main findings of this analysis included the following:

- With respect to functioning achievement (measured as fuzzy scores), in 2001 farm workers scored the lowest of all the labour groups in terms of housing services (access to water, sanitation and electricity), social relations (access to a telephone) and education achievement. Educational achievements were found to be particularly low – 12% of farm workers reported that they had no formal school education, while the provincial average was less than 5%. In terms of their access to economic resources, while farm workers individual and household monthly income levels exceeded that of the two unemployed groups (metro and non-metro)– their fuzzy score was roughly half of that achieved by workers in other sectors.

- These various functionings were weighted and aggregated to arrive at an overall wellbeing indicator, and almost no difference could be detected in the score achieved by farm workers, the metro and non-metro unemployed. This result was found to be relatively insensitive to the weight assigned to a particular functioning.

- While there is almost no difference in the overall level of human development "enjoyed" by farm workers and the unemployed, a large difference was found between farm workers and other workers in the economy. It can be argued that this discrepancy is indicative of the high concentration of unskilled workers found in the agricultural sector. However, when occupation was brought into consideration, a relatively large discrepancy in development levels between farm workers and employed unskilled workers could still be detected.

- In terms of gender, overall women farm workers scored slightly higher than men, however in terms of personal income they scored considerably lower than men. This difference could not be attributed to differences in the number of hours worked per week and confirms the findings of other studies that showed that women farm workers do not receive equal wages for equal work effort.

- The overall development status of farm workers was also compared with that of other workers in low wage industries name those i)employed in the forestry and fishing industry and ii) those employed by private households (domestic workers). Workers employed in the forestry and fishing industry were found to have a higher development status than farm workers while the difference between farm workers and domestic workers was found to be relatively small. Compared to these sectors, farm workers lagged most behind in terms of educational achievement.

- In terms of development status, the results generated by the 1996 population census, were consistent with 2001 however, here farm workers scored poorly in terms of the housing functioning, housing services, education and social relations. It was only with respect to the employment and economic resources functionings that farm workers ranked above the unemployed.

- By applying the Cheli and Lemmi frequency-based membership functions generated for 1996 to the 2001 data set, it was possible to detect absolute changes in development status that took place between 1996 and 2001. Relative to the

other labour groups, farm workers consistently exhibited the highest rate of progress. Education, social relations and housing services functionings scores in 2001, were 20% higher than 1996 levels. In terms of the economic functioning, numerous data transformations were implemented in order to make the 1996 data comparable with that of 2001. This process may have interfered with the integrity of the data and thus the research findings related to this functioning. The decline in real economic circumstances from 1996-2001 shown by this research should thus be treated with caution.

In response to the research question posed at the start of the dissertation: "Are Western Cape farm worker poor?", applying the human development approach to poverty measurement it was possible to answer this question in the affirmative because the hypothesis that farm workers are not poor, could not be accepted.

With respect to the policy implications of the results, while policy makers are obligated to intervene to remedy this situation on the basis of equity and efficiency considerations, the relative rate of progress farm workers have made since 1996 suggests a modicum of caution. This is especially true in light of the fact that a number of policy interventions affecting farm workers such as minimum wage legislation have only recently been implemented and require some time before they manifest as an improvement in development status. Furthermore, from the perspective of the Western Cape agricultural sector the increasing insistence of codes of conduct around good labour practice by international buyers of Western Cape agricultural products may serve as the incentive or "carrot " to complement the increasingly large policy "stick" that has been put in place.

Finally with respect to the contribution of this dissertation to human development theory and application thereof, using two successive and complementary data sets it was possible to propose a methodology that allowed poverty and development not only to be measured in a multivariate way but which also demonstrated how this approach could be made practicable and relatively easy to replicate over time.

BIBLIOGRAPHY

Abstract, 2003. **Abstract of Agricultural Statistics**. Pretoria: National Department of Agriculture

Abstract, 2004. **Abstract of Agricultural Statistics**. Pretoria: National Department of Agriculture.

Adams, B., 1993. **Sustainable Development and the Greening of Development Theory**. In F.J. Schuurmans (ed). Beyond the Impasse: New Directions in Development Theory. London: Zed Books.

Afxentiou, P.C., 1990. The Rhetoric and Substance of Basic Needs. **South African Journal of Economics**, Vol 58(1), pp 78-87

Albertyn C. and Kentridge J., 1994. Introducing the Right to Equality. **South African Journal on Human Rights**, Vol 10, pp 149-178.

Allen, T., 1992. **Taking Culture Seriously**. In T. Allen and A. Thomas. Poverty and Development in the 1990's. Oxford: Oxford University Press.

Allerts S., Kleynhans T. and N. Vink, 1998. Fynbos Exports for the Western Cape: A problem of logistics. **Agrekon,** 37(4), pp 588-596.

Anand S. and Ravaillion M., 1993. Human Development in Poor Countries: On the Role of Private Incomes and Public Service. **Journal of Economic Perspectives**, Vol 7(1), pp 133-150.

Arndt, H.W., 1987. **Economic Development: The history of an idea**. Chicago: The University of Chicago Press.

Banuri T., 1990. **Modernisation and its Discontents: A Cultural Perspective on the Theories of Development**. In F. Apffel Marglin and S. Marglin (eds), Dominating Knowledge: Development, Culture and Resistance. Oxford: Claredon Press.

Barrientos, S., Orton, L. and S McClenaghan, 1999. **Gender and Codes of Conduct in South Africa**. London: Christian Aid

Batie, S., 1991. Sustainable Development: Concepts and Strategies. A Paper presented the Twenty- First International Conference of Agricultural Economists, 22-29 August 1991, Tokyo, Japan .

Benhabib, S., 1995. Cultural Complexity, Moral Interdependence, and the Global Dialogical Community. In M. Nussbaum and J. Glover (eds), **Women, Culture and Development: A Study of Human Capabilities**. Oxford: Claredon Press.

Beukes, EP., 1989. 'Theories of economic development an overview and some implications'. In JK. Coetzee (Ed.), **Development is for People**. Johannesburg: Southern Book Publishers

Boltvinik, J, (1999). **Poverty Measurement Methods - An Overview**. SEPED Series on Poverty Reduction. New York: UNDP.

Brandolini, A. and D'Alessio G., 1998. **Measuring Well-being in the Functioning Space.** Rome: Banca d'Italia.

Broens, J., Van Dyk F.E. and S Tavasszy, 2000. **The cold fruit supply chain between South Africa and the Netherlands**. Unpublished TNO INRO Report, Netherlands.

Bunch, C., and Carrillo R, 1990. **Feminist Perspectives on Women and Development**. In Persistent Inequalities: Women and World Development, Irene Tinker (ed.) New York: Oxford.

Chen, M., 1995. A Matter **of Survival: Woman's Right to Employment in India and Bangladesh**. In M. Nussbaum and J. Glover (eds), Women, Culture and Development. A Study of Human Capabilities. Oxford: Claredon Press.

Chiappero Martinetti, E., 2000. **A multidmensitional assessment of well-being based on Sen's functioning approach.** Rivista Inernazionale di Scienze Socuali, Vol 2, pp 207-23.

Clark, D., and Qizilbash, M., 2002. **Core Poverty and Extreme Vulnerability in South Africa**. Discussion Paper No. 2002-3, the Economics Research Centre, School of Economic and Social Studies, University of East Anglia.

Conradie, B, 2004. Labour, wages and minimum wage compliance in the Breërivier valley six months after the introduction of minimum wages. A paper delivered at the Agricultural Economics Association of South Africa Conference, Somerset West. September 2004.

Conyers, D. and Hills, P., 1994. **An Introduction to Development Planning in the Third World**. Chichester: John Wiley and Sons.

Crocker D., 1991. Towards Development Ethics. **World Development**, Vol 19(5), pp 457-483.

Crocker, D., 1992. Functioning and Capability: The Foundations of Sen's and Nussbaum's Development Ethic. **Political Theory**, Vol 20(4), pp 584-612.

Crocker, D., 1995. **Functionings and Capability: The Foundations of Sen's and Nusbaum's Development Ethic, Part 2**. In M. Nussbaum and J. Glover (eds), Women, Culture and Development: A Study of Human Capabilities. Oxford: Claredon Press.

DAG (Development Action Group), 1994. **A statistical guide to the Western Cape**. Cape Town: DAG.

Desai, M., 1991. Human Development: Concepts and Measurement. **European Economic Review**, Vol 35, pp 350-357.

Dreze, J. and Gazdar, H., 1991. Hunger and Poverty in Iraq, 1991. **World Development**, Vol 20(7), pp 921-945

Dreze, J. and Sen., A., 1989. **Hunger and Public Action**. Oxford: Claredon Press.

Dreze, J. and Sen, A., 2002. **India –Development and Participation**. Oxford: Oxford University Press.

Du Toit, A. and Ally, F., 2002. **The Externalisation an Casualization of Farm Labour in Western Cape Horticulture: A survey of patterns in the agricultural labour market in key Western Cape districts and their implications for employment justice**. Unpublished research report for the Centre of Rural Legal Studies Stellenbosch and the Programme for Land and Agrarian Studies, UWC.

Dube, S.C., 1988. **Modernisation and Development: The Search for Alternative Paradigms**. Tokyo: The United Nations University and Zed Books Ltd.

Eckert, J.B, 1994. **A Human Development Framework for South Africa**. Midrand: Development Bank of Southern Africa.

Ellman, M., 1994. "The Increase in Death and Disease Under 'Katastroika'" **Cambridge Journal of Economics,** No. 18, pp

Emmett, T., 1989. Culture, structure and development: an alternative perspective. A Paper delivered at the conference, Development: The Human Challange, Development Society of Southerm Africa, 6-8 July 1988, University of Durban-Westville, Durban.

Erasmus, J., 1994. **A Human Development Framework for South Africa**. Center for Policy Analysis. Halfway House: Development Bank of Southern Africa.

Ewert, J., Hamman J., Tregurtha N., Vink N., Visser C., and G. Williams, 1998. **State and market, labour and land – the South African wine industry in transition**. Unpublished research report, University of Stellenbosch.

Freidberg, S., 2003. **The Contradictions of Clean: Supermarket Ethical Trade and African Horticulture**. IIED Gatekeeper Series No.109. London: IIED.

Gasper, D., 1993. Entitlements Analysis: Relating Concepts and Contexts. **Development and Change**, Vol 24(4), 679-718.

Ghai, D., 1990. **Participatory Development: Some Perspectives from Grassroots Experience**. In A.R. Kahn and R. Sobhan (eds), Trade, Planning and Development: Essays in Honour of Nurul Islam. Basingstoke, Hampshire: Macmillain Press Ltd.

Gleason, G., 2005. **There's no future for wheat in the Swartland**. Farmers Weekly, 28th of January.

Glover, J., 1995. **The Research Programme of Development Ethics**. In M. Nussbaum and J. Glover (eds), Women, Culture and Development. A Study of Human Capabilities. Oxford: Claredon Press

Gore, C., 1993. Entitlement Analysis and 'Unruly' Social Practices: A Comment on the Work of Amartya Sen. **The Journal of Development Studies**, Vol 29(3), pp 429-460.

Goulet, D., 1995. **Participation in development: New Avenues**. In V.K. Pillai and L.W. Shannon (eds), Developing Areas: A Book of Readings and Research. Oxford: Berg Publishers Ltd.

Griffin, K., and McKinley, T., 1994. **Implementing a Human Development Strategy**. Basingstoke, Hampshire: Macmillian Press Ltd.

Haddad L., and Oshaug A., 1999. How does the human rights perspective help to shape the food and nutrition policy research agenda? **Food Policy** Vol 23, 329-345.

Haysom N., 1992. 'Constitutionalism, Majoritarian Democracy and Socio-economic Rights'. **South African Journal on Human Rights**, Vol 8, pp 451-63.

Hettne, B.,1995. **Development theory and the Three Worlds**. Essex, UK: Longman Scientific and Technical.

Ingham, B., 1993. The Meaning of Development: Interactions between "New" and "Old" Ideas. **World Development,** Vol 21(11), pp 1803-1821.

Jahan, S., 2001. **Measuring human development: evolution of the Human Development Index.** UNDP, mimeo.

Jaquette, J.S., 1990. **Gender and Justice in Economic Development**. In Tinker, I. (ed.), Persistent Inequalities: Women and World Development. New York: Oxford.

Klasen, S., (2000), Measuring poverty and deprivation in South Africa, **Review of Income. and Wealth**, (46), pp. 33-58.

Korten, D.C., 1984. **People-Centred Development: Towards a Framework**. In D.C Korten and R. Klauss, (eds), People Centred Development: Contributions towards Theory and Planning Frameworks. Connecticut: Kumarian Press

Laderchi, R.C., 1999. **The many dimensions of deprivation in Peru: theoretical debates and empirical evidence.** Queen Elizabeth House Working Paper Series, Working Paper 29 QEHWP29. Oxford: Queen Elizabeth House.

Laderchi R.C., Saith R and F. Stewart, 2003. Does it Matter that we do not Agree on the Definition of Poverty? A Comparison of four approaches. **Oxford Development Studies**, Vol 31(3), pp 243-274.

Leiman, T, B. Conradie and Eckert, J., 2000. **Agriculture, Water Resources and The Macro Economy.** WWF: Macro Economic Reforms and Sustainable Development in Southern Africa. South African Project. DBSA, Midrand.

Lelli, S., 2001. **Factor Analysis vs. Fuzzy Sets Theory: Assessing the Influence of Different Techniques on Sen's Functioning Approach**, Public Economics Working Paper Series No 0121, Katholieke Universiteit Leuven, Centrum voor Economische Studie Working Group on Public Economics.

Lisk, F., 1983. **Conventional Development Strategies and Basic-Needs Fulfilment.** In M. Todaro (ed), Struggle for Economic Development: Readings in Problems and Policies. New York: Longman.

Livingstone, I., 1982. **The Development of Development Economics**. In I. Livingstone (ed), Approaches to Development Studies: Essays in honour of Athole Mackintosh. Aldridge, Hampshire: Gower.

London, L., 2003. Human Rights, Environmental Justice and the Health of Farm Workers in South Africa. **International Journal of Environmental Health**, Vol 9, pp 59-68.

MacKintosh, M., 1993. Pools and Networks: Researching intra-household and cross-household forms of unpaid labour. A paper prepared for the ANC Workshop on Unpaid Labour, Johannesburg, April 15-17 1993.

Marglin, S., 1990. **Towards the Decolonisation of the Mind**. In F. Apffel Marglin and S. Marglin (eds), Dominating Knowledge: Development, Culture and Resistance. Oxford: Claredon Press.

May, J. *et al.*, 1998. **Poverty and Inequality in South Africa**. Report prepared for the Office of the Executive Deputy President and the Inter-Ministerial committee for Poverty and Inequality. Durban: Praxis Publishing.

Murdoch, J, Ward, N and Lowe P., 1994. **Sustainable Agriculture and Endogenous Development: A Socio-Political Perspective**. In. Van der Ploeg, J.D. and Long, A (eds), Born From Within Practice and Perspectives of Endogenous Rural Development. Netherlands: Van Gorcum.

NAMC (National Agricultural Marketing Council), 2002. **Report on the Investigation into the Effects of Deregulation on the South African Wine Industry**. Pretoria: NAMC.

NDA (National Department of Agriculture), 2003. **Trends in the Agricultural Sector, 2003**. Pretoria: NDA.

Nussbaum, M., 1995a. **Human Capabilities, Female Human Beings**. In M. Nussbaum and J. Glover (eds), Women, Culture and Development. A Study of Human Capabilities. Oxford: Claredon Press.

Nussbaum, M., 1995b. **Introduction**. In M. Nussbaum and J. Glover (eds), Women, Culture and Development. A Study of Human Capabilities. Oxford: Claredon Press.

Oanda, 2003. www.oanda.com/fxhistory (Accessed January 2005)

Okin, S.M., 1995. **Inequalities between the Sexes in Different Cultural Settings**. In M. Nussbaum and J. Glover (eds), Women, Culture and Development. A Study of Human Capabilities. Oxford: Claredon Press.

Orkin, M., and Njobe, B., 2000. **Employment trends in agriculture in South Africa**. Pretoria: StatsSA.

Osmani, S., 1995. **The Entitlement Approach to Famine: An Assessment**. In K. Basu, P. Pattanaik, and K. Suzumura (eds), Choice, Welfare, and Development: A Festschrift in Honour of Amartya K. Sen. Oxford. Claredon Press.

Parpet, J., 1995. **Post-Modernism, Gender and Development**. In J. Crush (ed), Power of Development. London: Routledge.

Pearce, D., 1992. **The practical implications of sustainable development**. In P. Ekins and M. Max-Neef, (eds.) Real-life economics: Understanding Wealth Creation. London, New York: Routledge.

Phipps, S., 1999. **The Well-being of young Canadian children in international perspective**. LIS Working Paper No 197. Differdange: INSTEAD.

Pomfret, R., 1992. Diverse Paths of Economic Development. Hampstead, Hertfordshire: Harvester Wheatsheaf.

Porter, ME (1991), **The Competitive Advantage of Nations**. London: Macmillan.

Qizilbash, M., 1996. Ethical Development. **World Development**, Vol 24(7), pp 1209-1221.

Qizilbash, M., 2002. A Note on the Measurement of Poverty and Vulnerability in the South African Context, **Journal of International Development**, Vol (14), pp 759-772.

Rahnema, M., 1993. **Participation**. In Sachs(ed), The Development Dictionary: A Guide to Knowledge as Power. London and New Jersey: Zed Books

Rathberger, E. M., 1990. WID, WAD, GAD: Trends in Research and Practice. **Journal of Developing Areas**, Vol 24, pp 489-502.

Robeyns, I. 2000. **An unworkable idea or a promising alternative? Sen's capability approach re-examined",** Discussion paper 00.30, Center for Economic Studies, University of Leuven.

Robeyns, I. 2005. The Capability Approach: A Theoretical Survey. **Journal of Human Development**, forthcoming.

RSA (Republic of South Africa), 1996. **The Constitution of the Republic of South Africa**. Act 108 of **1996**. Pretoria: Government Printers

Ruccio, D.F. and Simon, L.H., 1992. **Perspectives on Development and Underdevelopment: Frank, the Modes of Production School and Amin**. In C.K. Wilber and K.P. Jameson (eds), The Political Economy of Development and Underdevelopment. New York: McGraw-Hill Inc.

Sachs, W., 1992. **Poor not different**. In P. Ekins and M. Max-Neef,(eds), Real Life Economics: Understanding Wealth Creation. London: Routledge.

Saith, R., 2001. **Capabilities: the Concept and its Operationalisation**. Queen Elizabeth House Working Paper Series, Working Paper 66 QEHWP66. Oxford: Queen Elizabeth House

SAWIS, 2004. **South African Wine Industry Statistics, 2004**. Paarl: SAWIS.

Schuurmans, F.J., 1993. **Introduction: Development Theory in the 1990's**. In F.J. Schuurmans (ed). Beyond the Impasse: New Directions in Development Theory. London: Zed Books

Sen, A., 1984a. **Goods and People**. In Sen, A. (ed), Resource, Values and Development. Oxford: Basil Blackwell.

Sen, A., 1984b. **Economics and the Family.** In Sen, A. (ed), Resource, Values and Development. Oxford: Basil Blackwell.

Sen, A., 1984c. **Ingredients of Famine Analysis: Availability and Entitlements.** Sen, A (ed), Resource, Values and Development. Oxford: Basil Blackwell

Sen, A., 1985. Well-being, Agency and Freedom: The Dewey Lectures 1984. **Journal of Philosophy**, Vol LXXII(4), pp 169-221.

Sen, A., 1986. **Development: Which Way Now**. In R. Althorpe and A. Krahl (eds), Development Studies: Critique and Renewal. Leiden: E.J. Brill.

Sen, A., 1987. **The Standard of Living: Lecture 1&2**. In G. Hawthorn (ed), The Standard of Living: the Tanner Lectures, Clare Hall, Cambridge 1985. Cambridge: Cambridge University Press

Sen, A., 1988. **The Concept of Development**. In H. Chenery and T.N Srinivasan, Handbook of Development Economics Volume 1. Amsterdam: North Holland.

Sen, A., 1989. Development as Capability Expansion. **Journal of Development Planning**, Vol 17, pp 41-58.

Sen, A., 1992. **Inequality Reexamined**. Oxford: Claredon Press

Sen, A., 1993. **Capability and Well-being**. In M Nussbaum and A. Sen (eds), The Quality of Life. Oxford: Claredon Press.

Sen, A., 1995. **Food, Economics and Entitlements**. In J. Dreze and A. Sen, The Political Economy of Hunger Vol III. Oxford: Claredon Press.

Smith, T., 1995. **Requiem or New Agenda for Third World Studies**? In V.K. Pillai and L.W. Shannon (eds), Developing Areas: A Book of Readings and Research. Oxford: Berg

Standing, G., 1989. Global Feminisation through Flexible Labour. **World Development**, Vol 15(7), pp 1077-1095.

Statistics South Africa, 1998. **Population Census 96, The Count and how it was done**. Statitsics South Africa, Methodlogical Report downloadable from: http://www.statssa.gov.za/census01/Census96/HTML/default.htm

Statistics South Africa, 2002. **Gross domestic product per region: annual estimates, 1995-2001**. Statistics South Africa, Discussion Paper.

Statistics South Africa, 2003. **Census 2001: How the count was done**. Report No 03-02-02 (2001). Statistics South Africa, 2003.

Statistics South Africa., 2004. **Census of commercial agriculture 2002 (summary)**. Statistics Release No P1101. Statistics South Africa and the National Department of Agriculture.

Streeten, P., 1979. From Growth to Basic Needs. **Finance and Development**, Vol XVI(3), pp 28-31.

Streeten, P., 1984. Basic Needs: Some Unsettled Questions, **World Development**, Vol 12(9), pp 973-978.

Sunde, J. and Kleinbooi K., 1999. **Promoting equitable and sustainable development for women farmworkers in the Western Cape**. Report on a research project undertaken by the Centre for Rural Legal Studies Stellenbosch.

Suttton, F.X., 1990. **Development Ideology: Its Emergence and Decline.** In F.X. Sutton(ed), A World to Make: Development in Perspective. New Brunswick and London: Transaction Publishers.

Todoro, M., 1989. **Economic Development in the Third World,** (Fourth Edition). London: Longman.

Tregurtha, N and Vink, N., 2002. **B2B E-Commerce and the South African Horticultural Export Industry: Current Status and Future Directions**. Report for Globalisation and Poverty Programme - Trade, Production and Poverty. Institute for Development Studies, University of Sussex. www.gapresearch.org/production/SAhortieecommerce.pdf

UNDP, 1993. **Human Development Report 1993**. New York:Oxford.

UNDP, 2003. **South African Human Development Report 2003**. New York:Oxford

UNDP, 2004. **Human Development Report 2004**. New York:Oxford

United Nations, 1995. World Summit for Social Development: the Copenhagen declaration and programme of action. New York: United Nations.

Van Zyl, J.C., 1995. Needs-based development strategy and the RDP: Some Broad Issues. Halfway House, Johannesburg: DBSA.

Verholst, T., 1987. **No Life Without Roots: Culture and Development**. London: Zed Books

Viljoen, J. and Eckert, J.B. 1997, **Engine of Growth: Commercial Agriculture in the Western Cape**. A paper prepared for the Land Reform Research Project co-ordinated by the Centre for Rural Legal studies and behalf of the Land and Agriucltural Policy Centre.

Vink, N. (Ed.), 2001. **The determination of employment conditions in South African agriculture**. A Report by the Department of Labour prepared together with the Centre for Rural Legal Studies, Stellenbosch and the National Institute of Economic Policy, Johannesburg. April 2001

Vink, N. and Tregurtha, N., 1999. **Spatial Guidelines for Infrastructure, Investment and Development: Rural Issues Theme Paper.** Report to the CIU, Office of the President.

Vink, N., and Tregurtha N., 2003. 2003. **Western Cape Agriculture: Structure, performance and future prospects – an overview**. A paper prepared for the Provincial Administration of the Western Cape.

Weaver, J. and Jameson, K., 1981. **Economic Development: Competing Paradigms**. Washington DC: University Press of America

Weigel, V.B., 1986. The Basic-Needs Approach: Overcoming the Poverty of Homo oeconomicus. **World Development**, Vol 14(12), pp 1423-1434

Wesgro, 2002. www.wesgro.co.za (Accessed September 2003).

Whiteford, A., Posel D & T Kelathang, 1995. **A Profile of Poverty, Inequality and Human Development**. Pretoria:Human Sciences Research Council

Wolf, S., 1995. **Martha C. Nussbaum: Human Capabilities, Female Human Beings: Commentary by Susan Wolf**. In M. Nussbaum and J. Glover (eds), Women, Culture and Development: A Study of Human Capabilities. Oxford: Claredon Press.

World Bank, 1990. **Making Adjustment work for the poor: a framework for policy reform in Africa**. Washington, D.C.:The World Bank.

APPENDIX 1

Table 1a: Skewness of average fuzzy scores

		Housing				Housing Services				Education	Social	Health			Job	Economic			Total
		Type	*Density*	*Ownership*	Housing	*Water*	*Sanitation*	*Energy*	Services	Education	Social	*Mortality*	*Disability*	Health	Job	*Income*	*H Income*	Economic	F Score
Total		***-0.98***	***-0.02***	***-0.26***	**-0.49**	***-0.77***	***-2.20***	***-1.43***	**-1.56**	**-0.41**	**-0.58**	***-5.07***	***-6.31***	**-5.24**	**0.13**	***0.29***	***0.06***	**0.21**	**-0.40**
	Male	*-0.97*	*-0.06*	*-0.24*	-0.49	*-0.74*	*-2.09*	*-1.36*	-1.49	-0.34	-0.54		*-6.17*	-6.17	0.12	*0.17*	*0.04*	0.14	-0.39
	Female	*-0.98*	*0.02*	*-0.29*	-0.50	*-0.80*	*-2.33*	*-1.50*	-1.64	-0.50	-0.62	*-5.07*	*-6.47*	-4.56	0.14	*0.43*	*0.09*	0.28	-0.43
Agricultural Workers		***-2.37***	***0.35***	***1.51***	**-0.41**	***-0.41***	***-0.90***	***-0.90***	**-0.79**	**0.68**	**0.59**	***-3.53***	***-5.88***	**-4.50**	**2.50**	***1.31***	***0.57***	**1.06**	**0.39**
	Male	*-2.39*	*0.19*	*1.60*	-0.42	*-0.37*	*-0.78*	*-0.78*	-0.69	0.71	0.57		*-5.64*	-5.64	2.32	*1.15*	*0.51*	0.96	0.43
	Female	*-2.35*	*0.61*	*1.39*	-0.39	*-0.47*	*-1.09*	*-1.10*	-0.93	0.63	0.64	*-3.53*	*-6.28*	-3.55	2.80	*1.62*	*0.64*	1.20	0.31
Workers in other sectors		***-1.21***	***-0.39***	***-0.60***	**-0.76**	***-1.26***	***-3.13***	***-2.23***	**-2.26**	**-0.74**	**-1.20**	***-5.84***	***-6.77***	**-5.74**	**-0.24**	***-0.36***	***-0.43***	**-0.35**	**-0.91**
	Metro	*-1.07*	*-0.48*	*-0.69*	-0.75	*-1.40*	*-3.30*	*-2.41*	-2.42	-0.85	-1.44	*-6.22*	*-7.25*	-6.14	-0.37	*-0.48*	*-0.56*	-0.47	-1.06
	Non-metro	*-1.62*	*-0.18*	*-0.40*	-0.78	*-0.94*	*-2.77*	*-1.84*	-1.93	-0.44	-0.72	*-5.15*	*-5.86*	-4.97	0.10	*-0.06*	*-0.13*	-0.04	-0.61
Unemployed		***-0.37***	***0.63***	***-0.04***	**-0.13**	***-0.11***	***-1.61***	***-0.61***	**-0.93**	**-0.17**	**0.08**	***-4.57***	***-5.69***	**-4.69**	**.**	***5.94***	***1.19***	**1.62**	**-0.24**
	Metro	*-0.23*	*0.61*	*-0.01*	-0.04	*-0.15*	*-1.57*	*-0.61*	-0.92	-0.23	-0.02	*-4.57*	*-6.04*	-4.89	.	*5.81*	*1.16*	1.59	-0.25
	Non-metro	*-0.79*	*0.68*	*-0.10*	-0.38	*-0.01*	*-1.74*	*-0.63*	-0.98	-0.02	0.33	*-4.56*	*-4.97*	-4.24	.	*6.28*	*1.24*	1.64	-0.22

Source: Own calculation based on Census 01

Table 1b: Pairwise Correlation between indicators

	Type	Density	Ownership	Water	Sanitation	Energy	Education	Social	Health	Disability	Job	Income	H.Income
Type	1.00												
Density	0.12	1.00											
Ownership	0.33	0.14	1.00										
Water	**0.46**	0.20	0.26	1.00									
Sanitation	0.38	0.11	0.25	**0.52**	1.00								
Energy	**0.40**	0.17	0.24	**0.53**	**0.49**	1.00							
Education	0.12	0.30	0.21	0.26	0.20	0.26	1.00						
Social	0.23	0.28	0.28	0.37	0.32	0.38	**0.40**	1.00					
Mortality	0.03	0.01	0.05	0.06	0.06	0.09	0.12	0.08	1.00				
Disability	0.01	0.00	0.02	0.03	0.02	0.03	0.04	0.03	0.01	1.00			
Job	0.21	0.36	0.18	0.32	0.20	0.30	0.40	0.39	0.07	0.03	1		
Income	0.22	0.38	0.22	0.34	0.23	0.33	**0.41**	**0.43**	0.07	0.03	**0.80**	1.00	
H. Income	0.24	**0.47**	0.24	0.38	0.24	0.36	**0.45**	**0.48**	0.07	0.03	**0.65**	**0.77**	1.00

Source: Own calculation based on Census 01

Table 1.c: Pairwise Correlations between functionings

	Housing	Service	Education	Social	Job	Economic	F. Score
Housing	1.00						
Service	**0.51**	1.00					
Education	0.28	0.29	1.00				
Social	0.37	**0.43**	**0.40**	1.00			
Job	0.35	0.32	**0.40**	0.39	1.00		
Economic	**0.43**	**0.40**	**0.46**	**0.48**	**0.76**	1.00	
F. Score	**0.69**	**0.76**	**0.64**	**0.76**	**0.66**	**0.75**	**1.00**

Source: Own calculation based on Census 01

Table: 1d Pairwise Correlation between indicators

	Type	Density	Ownership	Water	Sanitation	Energy	Education	Social	Health	Disability	Job	Income	H.Income
Type	1.00												
Density	0.12	1.00											
Ownership	0.33	0.14	1.00										
Water	**0.46**	0.20	0.26	1.00									
Sanitation	0.38	0.11	0.25	**0.52**	1.00								
Energy	**0.40**	0.17	0.24	**0.53**	**0.49**	1.00							
Education	0.12	0.30	0.21	0.26	0.20	0.26	1.00						
Social	0.23	0.28	0.28	0.37	0.32	0.38	**0.40**	1.00					
Mortality	0.03	0.01	0.05	0.06	0.06	0.09	0.12	0.08	1.00				
Disability	0.01	0.00	0.02	0.03	0.02	0.03	0.04	0.03	0.01	1.00			
Job	0.21	0.36	0.18	0.32	0.20	0.30	0.40	0.39	0.07	0.03	1		
Income	0.22	0.38	0.22	0.34	0.23	0.33	**0.41**	**0.43**	0.07	0.03	**0.80**	1.00	
H. Income	0.24	**0.47**	0.24	0.38	0.24	0.36	**0.45**	**0.48**	0.07	0.03	**0.65**	**0.77**	1.00

Source: Own calculation based on Census 01

Table 1e. Pairwise Correlations between functionings

	Housing	Service	Education	Social	Job	Economic	F. Score
Housing	1.00						
Service	**0.51**	1.00					
Education	0.28	0.29	1.00				
Social	0.37	**0.43**	**0.40**	1.00			
Job	0.35	0.32	**0.40**	0.39	1.00		
Economic	**0.43**	**0.40**	**0.46**	**0.48**	**0.76**	1.00	
F. Score	**0.69**	**0.76**	**0.64**	**0.76**	**0.66**	**0.75**	**1.00**

Source: Own calculation based on Census 01